SSM4 (Subaru Select Monitor 4)

Instruction manual

September 2019

SUBARU CORPORATION

Introduction

Thank you for purchasing the Subaru Select Monitor 4 (hereinafter referred to as SSM4).

Please thoroughly read this manual in order to use this product correctly and safely.

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Disclaimers

- SSM4 uses the Denso DST-i as the interface box.
  Other products cannot be used as the interface box.
- Specifications of SSM4 and the DST-i are subject to change without prior notice.
  Updated versions are not guaranteed to be 100% compatible with previous versions.

Trademarks

- Microsoft, Windows, Internet Explorer, Windows 8, Windows 7 are trademarks or registered trademarks in the United States and other countries.
- Intel and Intel Core are trademarks or registered trademarks of Intel Corporation and their subsidiaries in the United States and other countries.
- SD memory card trademarks and SDHC memory card trademarks are registered trademarks of United States SanDisk and Toshiba Corporation.
- Other company names and product names are trademarks or registered trademarks of their respective companies.

Outline of functions

SSM4 includes the following functions necessary to perform diagnosis.

Project management	SSM4 manages the data produced by one fault diagnosis in units of projects. This data includes the read DTCs, data monitor data, and other data. Managing data using projects in this way makes it easy to understand what diagnostics were performed on a particular vehicle. Project management enables you to easily understand and manage diagnostics history through the utilization of project names, separate data files, and memo fields. This also enables you to export the data (save the project as one file) and check diagnostics results on other computers. This enables you to import exported data into other computers to manage projects and individual data files. This enables you to restart diagnosis not yet complete from saved projects and imported projects.
All DTC function	DTCs from multiple systems installed in a vehicle can be read in a batch and displayed. These DTCs can also be deleted in a batch.
DTC function	DTCs and freeze frame data from the system under diagnostics can be read and displayed. These DTCs and freeze frame data can also be deleted.
Readiness codes function	This enables you to check the implementation status (history) of diagnosis on devices related to exhaust gas.
Data monitor function	This enables you to monitor the values input and output into/from the vehicle computer (ECU). Each signal value can be reviewed in a list display or graph display. Graph displays enable you to observe changes in signal values as well as dynamic changes using waveforms. This also enables you to compare data from previous diagnostics.
Active test function	This supplies commands to the ECU to identify area experiencing malfunction and manually drives the actuator. This enables you to run the active test while also running the data monitor.
Utility function	This provides various types of utilities. The types of support available item differ depending on the vehicle and system.

Notes

- The functions available differ depending on the vehicle.
- Please note that this is not an exhaustive list of all functions.

Using this product safely

- This product should only be used by automotive technicians who have undergone specialized training and have the necessary experience. Observe the following safety messages in this instruction manual and exercise caution when using this product.
- We are not capable of providing advice and safety messages covering all possible scenarios of vehicle diagnostics and maintenance due to the many differences in personal experience, work procedures, skills, tools, parts, and so on. It is the responsibility of the automotive technician to possess sufficient knowledge on diagnostics systems. It is imperative to perform work using the appropriate diagnostics and maintenance methods and devices to ensure the safety of you and others in the work space as well as prevent damage to vehicles under diagnosis and devices.
- As a prerequisite to use this product, the user must have sufficient knowledge of vehicle systems. Using this product appropriately, safely, and correctly requires sufficient knowledge of the operating procedures for this product as well as the principles of vehicle systems.
- Various symbols are used in this manual. These symbols are intended to ensure correct usage of this product and prevent harm to you and others. The following table describes these symbols and their meaning. Make sure to read and thoroughly understand these details.

Warning	Indicates situations in which ignoring these displays and incorrect handling may result in injury or death.
Caution	Indicates situations in which ignoring these displays and incorrect handling may result in injury or death and physical damage, and situations that may lead to serious consequences in some circumstances.

The following symbols are used together with the aforementioned symbols to indicate the type of harm or damage.

	This symbol indicates warnings and cautions. Symbols inside or next to this symbol indicate the specific warnings.
	This symbol indicates prohibited actions. Symbols inside or next to this symbol indicate the specific prohibitions.
	This symbol indicates instructions that require compliance. Symbols inside or next to this symbol indicate the specific instructions.
Important	This indicates precautions and prohibitions regarding the use of this product.
Notes	This describes information related to operation and other supplementary information. Read this information as necessary.

Warning

Perform diagnostics and maintenance in accordance with the precautions described in "Performing safe diagnostics".

Before using this product, refer to and observe safety messages and appropriate diagnostics procedures supplied by the manufacture of the vehicle being diagnosed and related equipment.
Failure to observe these precautions may result in accident.

Do not perform work while the vehicle is running.
Doing so may result in failure.

Do not run cables such that workers or drive control devices become entangled.
Doing so may result in accident.

Observe the following warnings as they are related to causes of heat, fire, explosion, and electric shock.

- Do not connect equipment to power supplies exceeding the rated voltage.
- Do not connect probes to areas exceeding rated voltages.

⚠ Caution

- Use wheel stoppers to prevent the wheels from moving before you begin work.
  Doing so may result in accident.
- When performing work in areas not easily visible such as underneath the vehicle, make sure to turn off the starter switch (ignition switch) and prevent the vehicle from moving.
  Doing so may result in accident.
- Make sure there are no other people in the vicinity before starting the engine or moving the vehicle.
- The ECU and indicators produce high voltages exceeding 100 V. Exercise caution against electric shock when performing work.
- Disconnect the ground wire from the battery before removing parts.
- Excluding cases of special instruction, make sure to turn off the starter switch (ignition switch) when connecting or disconnecting connectors and electrical terminals in the vehicle.
  Failure to do so may cause damage to electrical circuits in the vehicle.
- Use safety goggles and protective clothing when working near rotating parts.
  Engine rotation may cause parts to break and result in accident.
- Remove the radiator cap only when the engine is cool.
  Failure to do so may result in being covered in engine coolant pressurized by high temperatures.
- Do not directly touch areas of high temperature such as the exhaust, manifolds, engine, and radiator.
  Doing so may cause burns.
- Use gloves when touching and handling the engine or other high temperature parts.
- Do not run cables for this product in the engine room while the engine is running.
  Cables and clothing could be pulled by belts or pulleys causing accident.
- Do not perform work in wet locations.

Performing safe diagnostics

The following general precautions should be observed when performing diagnostics and maintenance.

Performing safe diagnostics
• Do not place metals tools on the battery. • Do not cause sparks near the battery. *Doing so may cause battery gases to ignite.* • Keep lit cigarettes, sparks, open flames, and other ignition sources away from the vehicle and battery. • Before removing the battery or cables, make sure to turn off the starter switch (ignition switch) and turn off headlights and other accessories. • Before servicing electrical systems and components, make sure to disconnect the ground wire from the battery. • Batteries can release short-circuit current strong enough to melt jewelry. Remove jewelry such as rings, bracelets, and watches before working near the battery. *Doing so may result in accident.* • Workers handling the battery or working near the battery must use safety goggles and protective gloves. If battery fluid comes into contact with the clothing, skin, or eyes, rinse the affected area with soap and water for 10 minutes. Seek immediate medical attention afterwards. • Do not directly rub or touch your eyes when working near the battery. *Battery fluid may cause burns to the eyes and skin.* • Do not connect the battery terminals with jumper wires or other tools. • Do not connect electrical terminals that may be powered. *Failure to do so may cause damage to electrical circuits in the vehicle.* • Perform work with the engine running in areas with equipment that direct exhaust gas outside of the facility. *Engine exhaust gas contains deadly odorless gas which may cause injury or death from poisoning.* • Do not use this product in environments that collects explosive vapors such as underground pits or enclosed indoor areas. • Do not smoke or light matches when working. *Doing so may cause battery gases or other explosive gases to ignite.* • Do not use flammable sprays or cleaning sprays when performing diagnostics. • Prepare dry chemical extinguishers for gasoline, chemical and electrical fires in case of fire due to explosion. • Workers and those in the vicinity must wear safety goggles and protective clothing. *Failure or incorrect operation of vehicle systems may cause the release of fuel, oil vapor, high temperature steam, toxic gases, acid, refrigerant, and other harmful substances.*

Operating environment

SSM4 must be used in the following environment.

PC environment

OS	Microsoft Windows 7 (32-bit or 64-bit) Microsoft Windows 8 (32-bit or 64-bit) Microsoft Windows 8.1 (32-bit or 64-bit) Microsoft Windows 10 (32-bit or 64-bit)
CPU	Intel Core i5 series or higher
Memory	Windows 7 (32-bit): At least 1 GB Windows 7 (64-bit): At least 2 GB Windows 8 (32-bit): At least 1 GB Windows 8 (64-bit): At least 2 GB Windows 8.1 (32-bit): At least 1 GB Windows 8.1 (64-bit): At least 2 GB Windows 10 (32-bit): At least 1 GB Windows 10 (64-bit): At least 2 GB
Hard disk	At least 1 GB of free space
USB	USB 2.0 (at least one available port)
Display	Resolution of at least 1024x768 pixels
Internet connection	Needed to register the G/H/I-type immobilizer.
SD card slot/reader	Needed to directly read SDR data from SD cards connected to a computer, in the driving recorder mode.

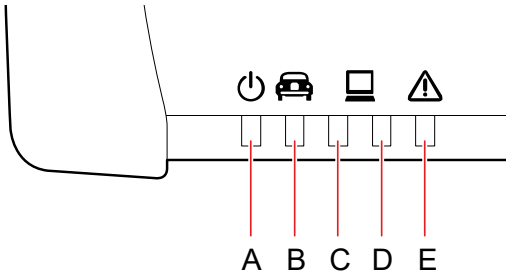
*Not guaranteed to operate on all computers.

Connected devices

Interface box	DST-i
Data link cable	DST-i accessories
USB CABLE	DST-i accessories

1. DST-i

1-1. LED indicator specifications of DST-i



SMU-01303

A	Power indicator	Shows the status of power. Lights in green during power ON.
B	Vehicle indicator	Shows the status of communications with the vehicle. Flashes in green during active communications.
C	PC (Bluetooth) indicator	Show the status of Bluetooth communications with the PC. Flash in blue during active communications.
D	PC (USB) indicator	Shows the status of USB communications with the PC. Flashes in green during active communications.
E	Error indicator	Lights or flashes in red when an error occurs. ON: Hardware / Software trouble. Flashes: Firmware not yet installed.

1-2. Bluetooth communication

To connect DST-i with a PC through the Bluetooth communication function, you must install the Bluetooth driver software and execute pairing*1 to the PC beforehand.
*1: It prevents from communicating with an unrelated apparatus. It is work to authenticate each other to maintain security.

Notes

- You can carry out this function only when DST-i to use is model with Bluetooth.
- Bluetooth wireless technology enables to communicate in the distance up to 10 m around, but the effective communication range varies depending on obstacles (human body, metal, wall, etc.) and the condition of radio wave.

Important

- Use of a Windows standard Bluetooth driver is recommended for use of a Bluetooth driver.
- This information does not guarantee the connection between all of commercially available Bluetooth modules and information terminals equipped with Bluetooth (e.g., PC and cellular phone).
- Use a Bluetooth module that is labeled with the Bluetooth logo mark and conforms to the Bluetooth standard 2.0.
- Total eight Bluetooth modules and information terminals having Bluetooth can execute paring with DST-i. If ninth Bluetooth module or information terminal executes paring, first Bluetooth module or information terminal will be cancelled.
- If disconnection of communication could cause malfunctions of vehicle or an accident, work on a PC connecting this product using the USB cable.
- When you use Bluetooth, you can not run the re-program and registration of the immobilizer. When you use these functions, please perform it by USB connection.

1-2-1. Pairing and installation of Bluetooth driver

This section is described the setting method using the Bluetooth driver equipped as the standard of windows in Windows10, Windows8, Windows 7.
When you use the OS except the above or it becomes the use by a driver (setting tool) attached to the Bluetooth module, Please perform installation and setting according to the instruction manual of the Bluetooth module.
When you use a PC equipped with Bluetooth as standard equipment, please set it according to the instruction manual of the PC. In this case give you a pairing cord (pass key) for "0000".

For Windows10, Windows 8

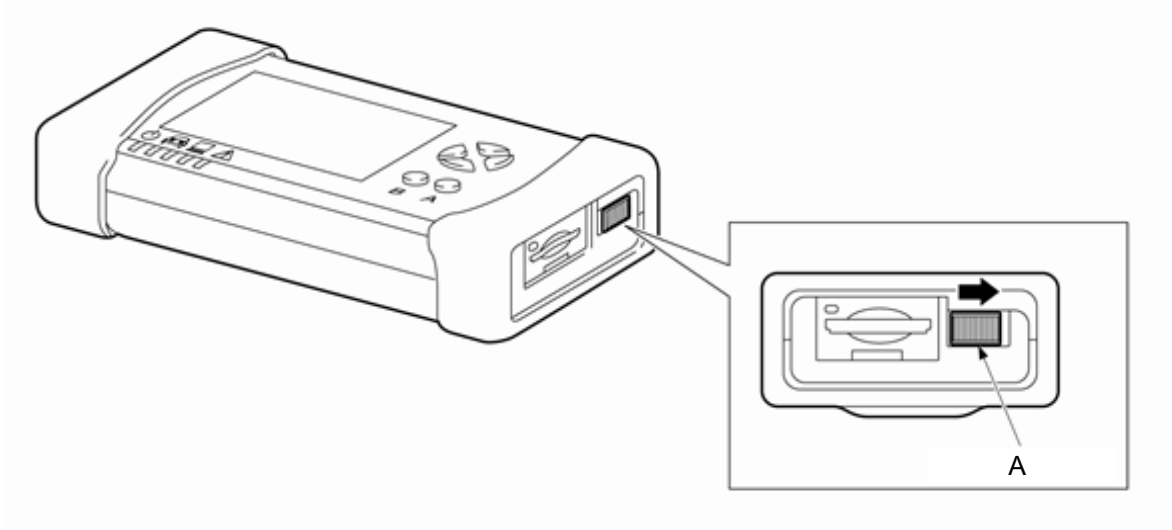
How to use the following, will explain the screen in Windows 8. If you are using Windows 10, screens and messages are slightly different.

- Connect the Bluetooth module to the USB port of your PC.
- Progress of the installation of Bluetooth drivers will be displayed in the notification area of the taskbar at the bottom left of the screen of the PC. And to start the installation. When the installation is complete, the progress of the installation will disappear.

SMU-01524

Important
- Do not proceed to the next step until the installation is complete.

- Connect DST-i and a PC with the USB cable.
- Turn the mode switch of DST-i ON.

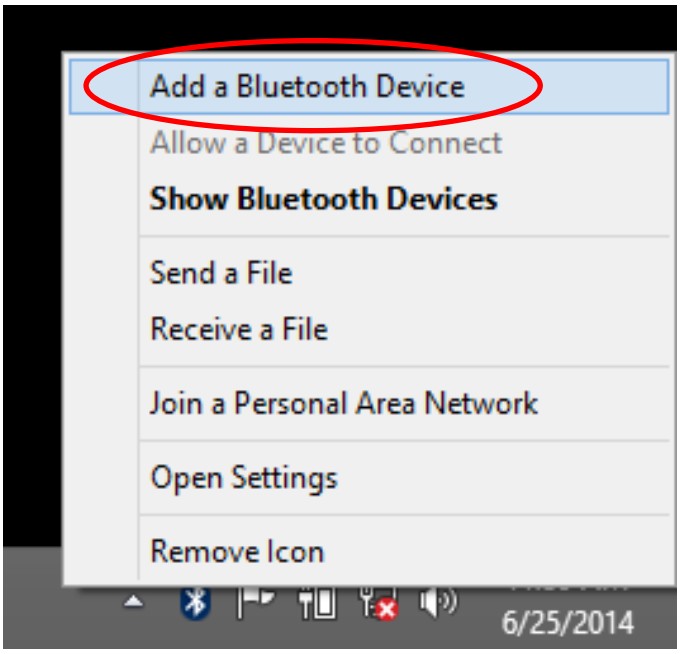


SMU-01570

A: Mode switch

Notes
- The mode switch is not equipped with a model without LCD. The power supply of this product is turned ON when this product is connected to a PC with the USB cable.

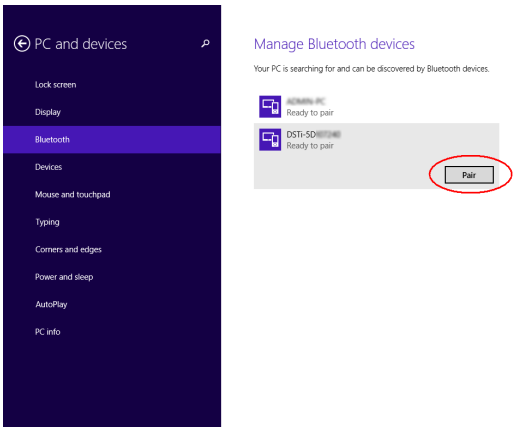
- Click the Bluetooth icon on the taskbar to select "Add a Bluetooth Device".



SMU-01525

Notes
- If the Bluetooth icon is not displayed on the taskbar, please refer to the section of [If the Bluetooth icon is not displayed on the taskbar].

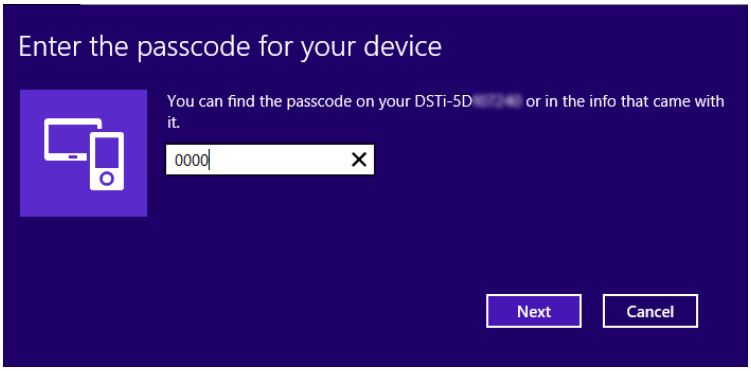
- Select "DSTi-5D******" and click [Pair].



SMU-01526

Notes
- ****** is a serial number of DST-i.
- The serial number can be found on the back surface of DST-i.

- Enter the pairing code "0000" and click [Next].



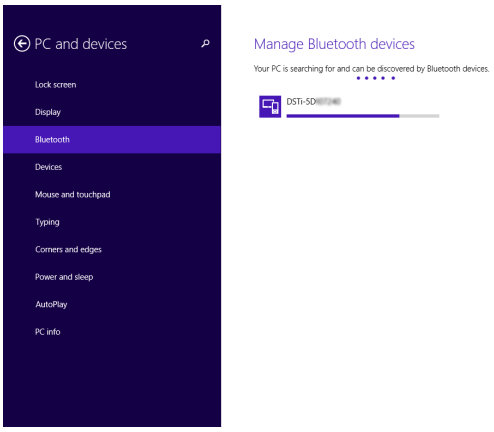
SMU-01527

Notes

- If a longer time than the prescribed time is taken for entry of pairing code, or an incorrect pairing code is entered, an error message is displayed. Click [Close] to undo the entry.

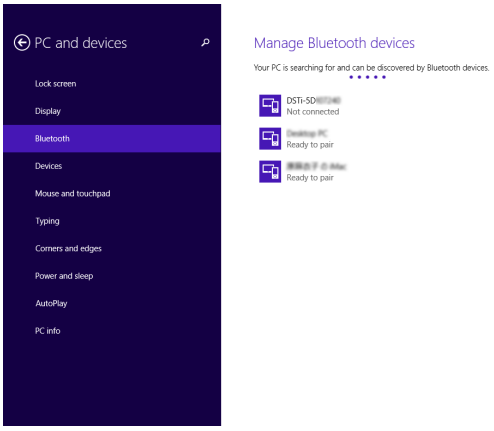
- Pairing of the Bluetooth is initiated.

  Wait for a while until it is completed.



SMU-01528

- Confirm applicable DST-i is added.



SMU-01529

Notes

- Pairing is complete, if the "Communication port setting of Bluetooth" is not complete, you will not be able to Bluetooth communication. Refer to the "Communication port setting of Bluetooth" section, please execute the communication port settings.

For Windows7

- Connect the Bluetooth module to the USB port of your PC.
- The Bluetooth icon and a message are displayed in the taskbar notification area at the right bottom of the PC screen, and installation of the Bluetooth driver is initiated.

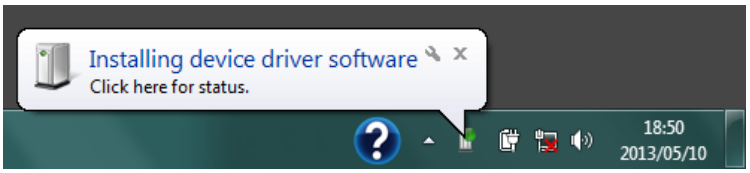
Notes

- The number of messages displayed at the right bottom of the PC screen is different depending on PCs and the Bluetooth module.
- The message at the right bottom of PC screen is displayed only for a moment so that you may not be able to confirm it.

Important

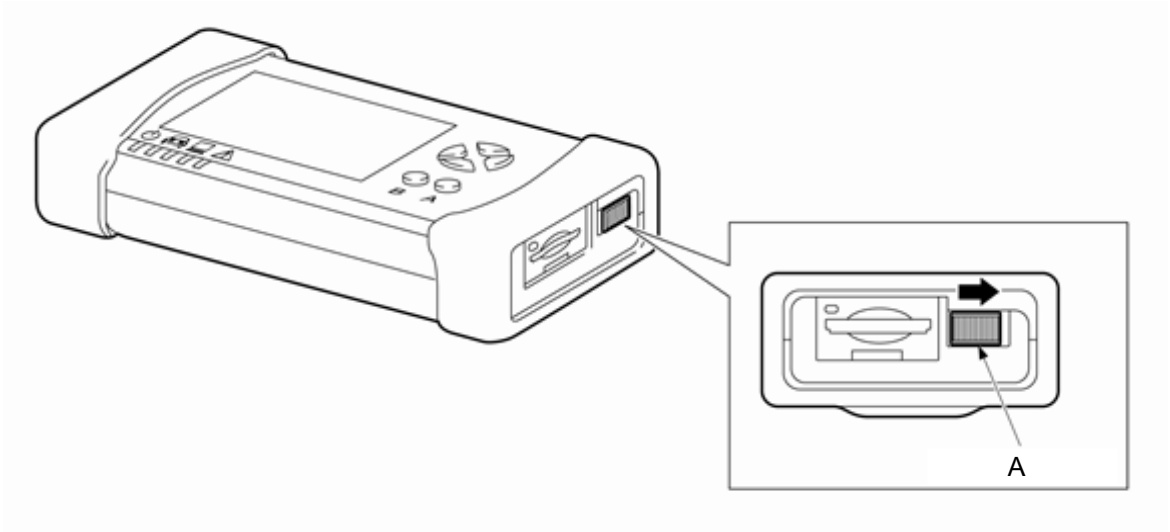
- Do not start the next step until the message informing of completion of installation is displayed.

- At the end of installation, the message informing of completion of installation is displayed.



SMU-01457

- Connect DST-i and a PC with the USB cable.
- Turn the mode switch of DST-i ON.



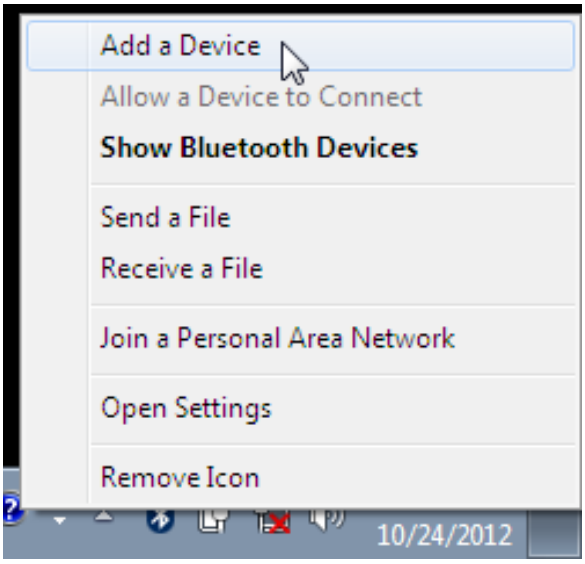
SMU-01570

A: Mode switch

Notes

- The mode switch is not equipped with a model without LCD. The power supply of this product is turned ON when this product is connected to a PC with the USB cable.

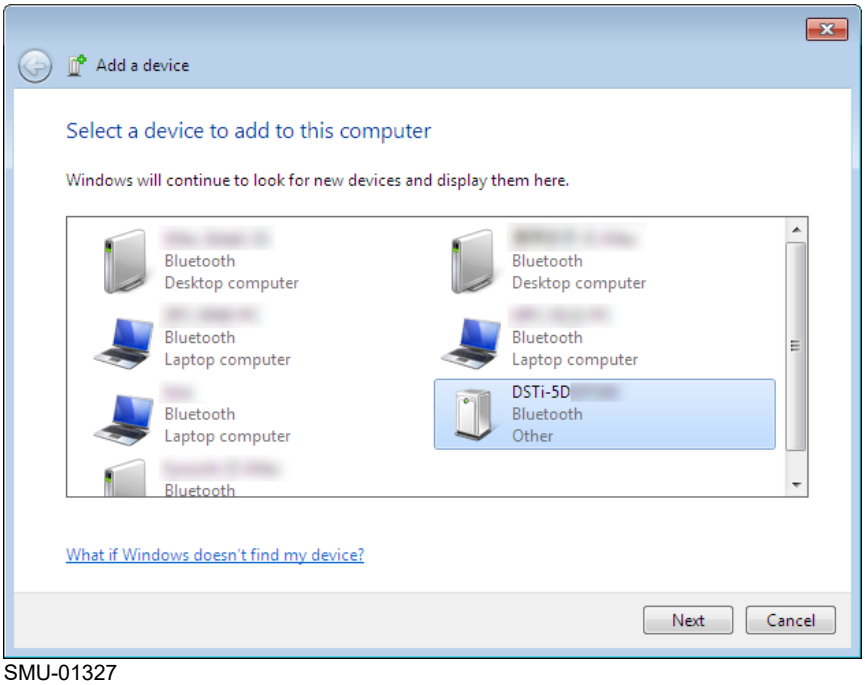
- Right click the Bluetooth icon on the taskbar to select "Add a Device".



SMU-01326

Notes
- If the Bluetooth icon is not displayed on the taskbar, please refer to the section of [If the Bluetooth icon is not displayed on the taskbar].

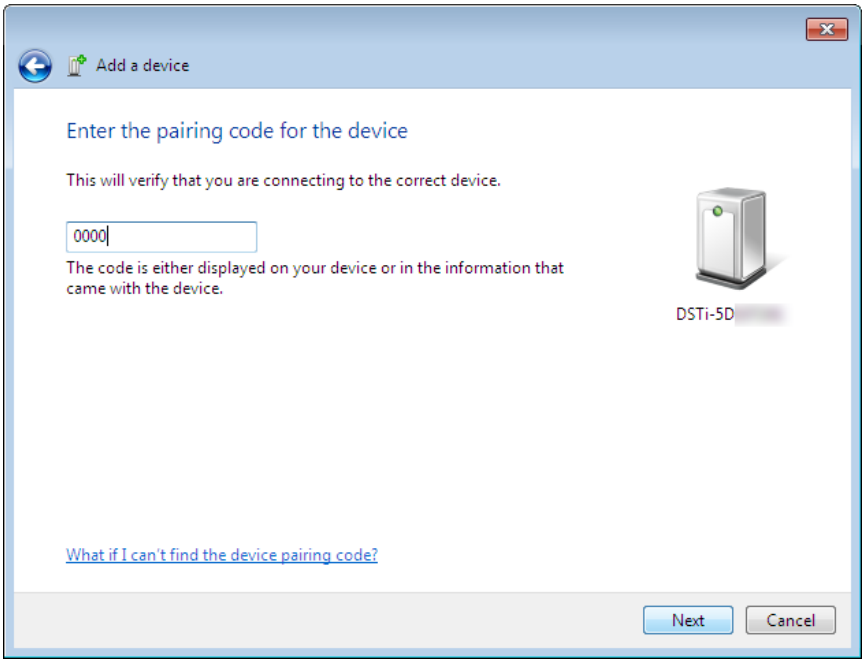
- Select "DSTi-5D******" and click [Next].



SMU-01327

Notes
- ****** is a serial number of DST-i.
- The serial number can be found on the back surface of DST-i.

- Enter the pairing code "0000" and click [Next].

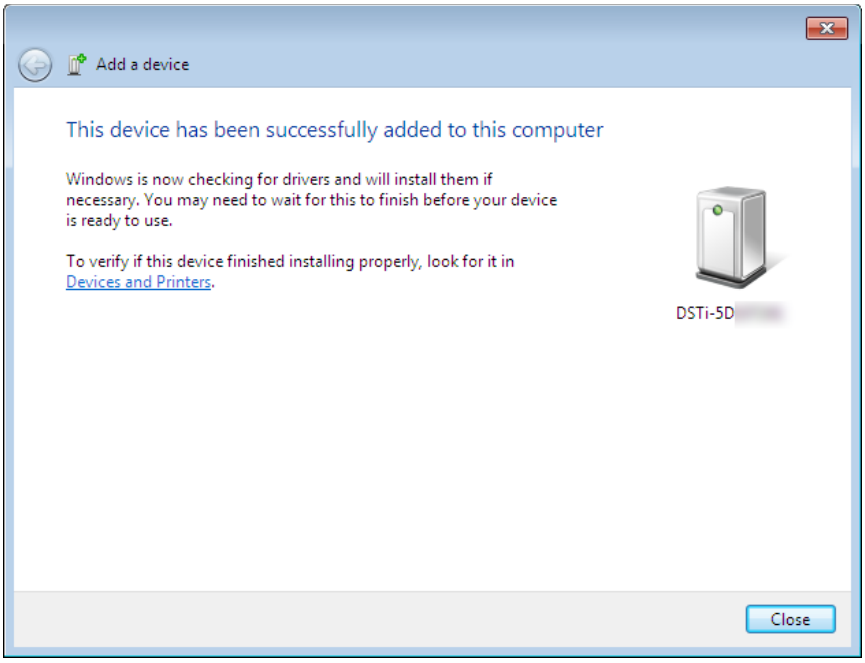


SMU-01328

Notes

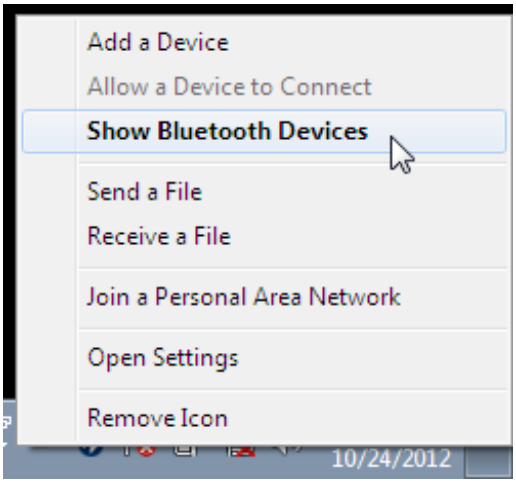
- If a longer time than the prescribed time is taken for entry of pairing code, or an incorrect pairing code is entered, an error message is displayed. Click [Try Again] to undo the entry.

- When the pairing is completed, the notice of completion of pairing will be shown on a PC screen.



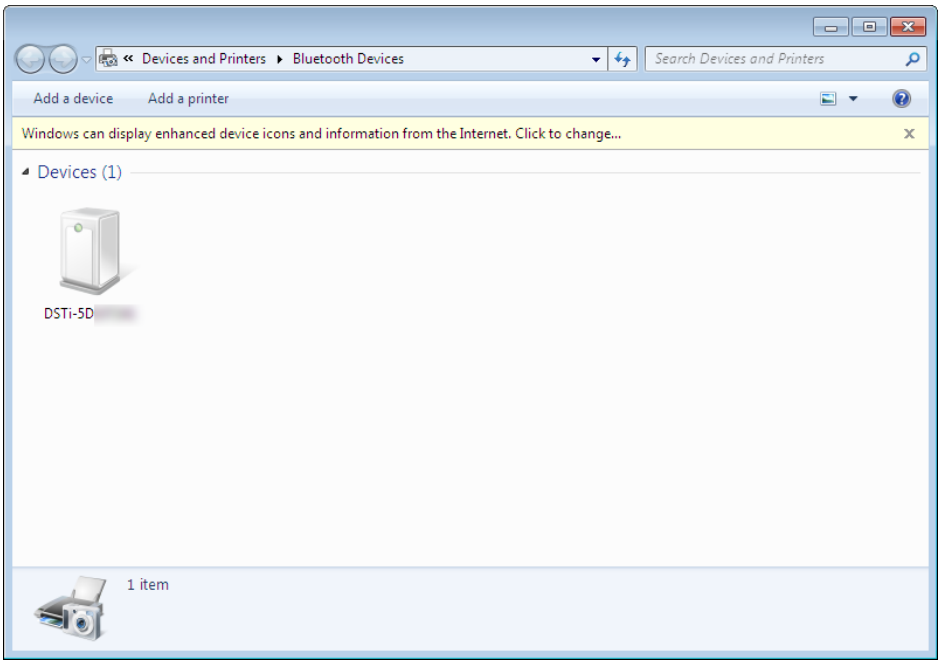
SMU-01329

- Right click the Bluetooth icon on the taskbar to select "Show Bluetooth Devices".



SMU-01330

- Confirm applicable DST-i is added.



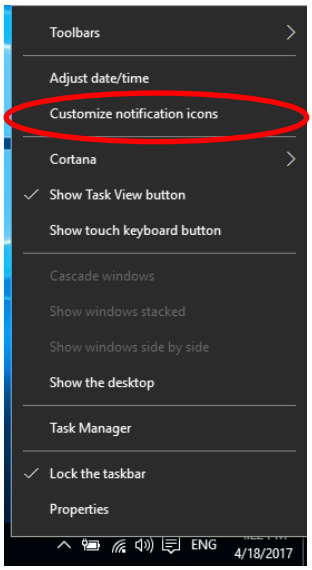
SMU-01331

1-2-2. If the Bluetooth icon is not displayed on the taskbar

For Windows 10

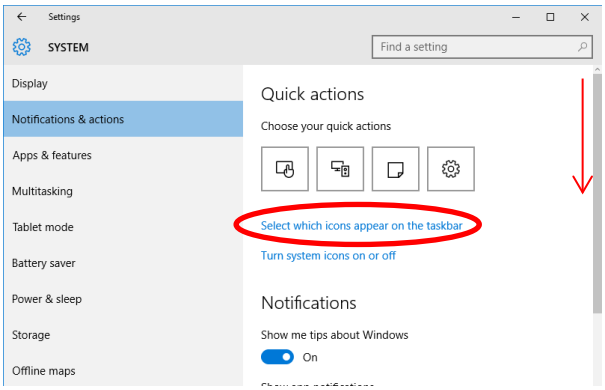
- Display the desktop screen, right-click the date

in the lower-right corner and select “Customize notification icons”.



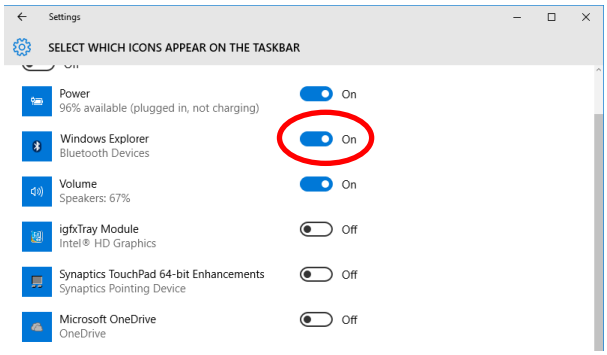
SMU-10051

- Lower the slider bar on the right side of the window and select “Select which icons appear on the taskbar”.



SMU-10052

- Set the Bluetooth icon display switch to “On”.



SMU-10053

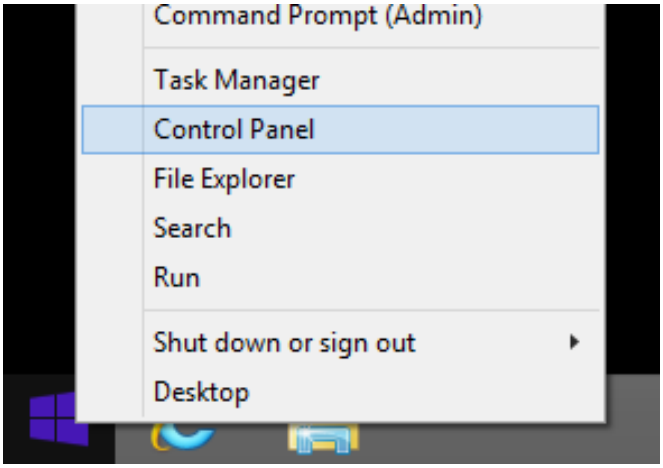
- The Bluetooth icon is displayed on the taskbar.

SMU-10054

For Windows 8

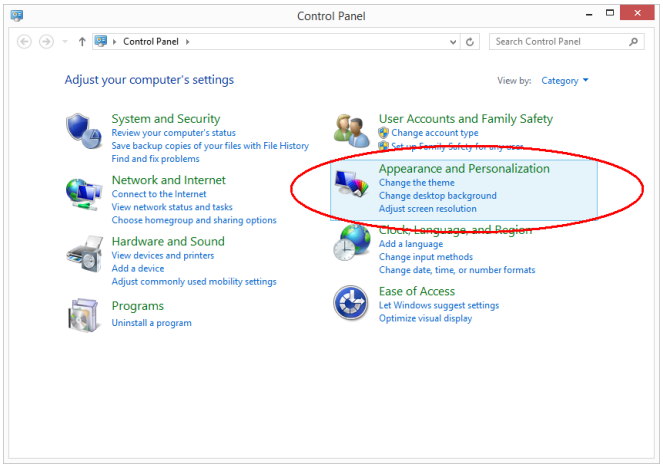
- You display the desktop screen.

  Right-click the Start button on the bottom left of the screen, and then select "Control Panel".



SMU-01531

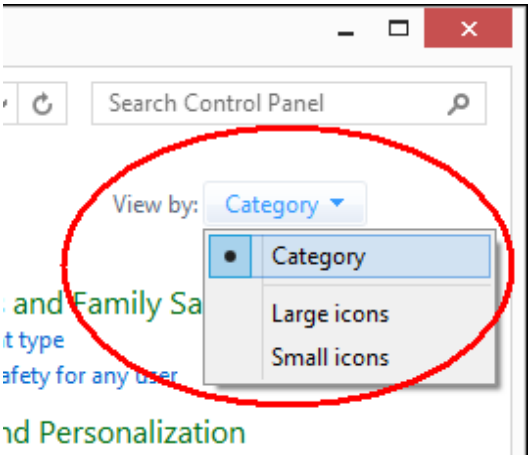
- Select "Appearance and Personalization".



SMU-01532

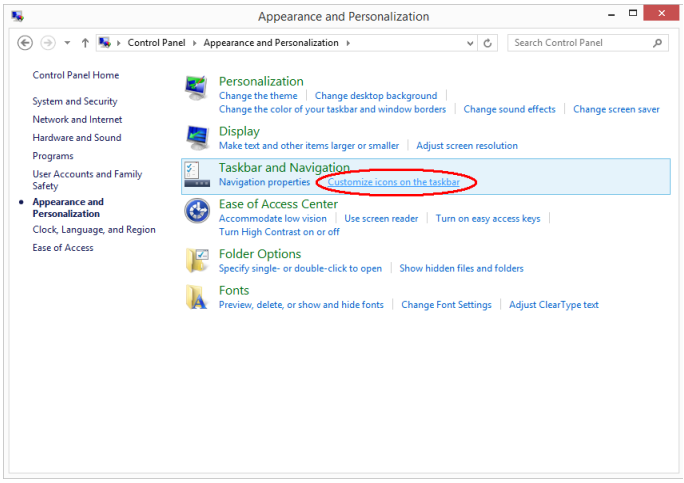
Notes

- If the "Appearance and Personalization" is not displayed, please set to "Category" an item in the "View by" to the right of the screen.



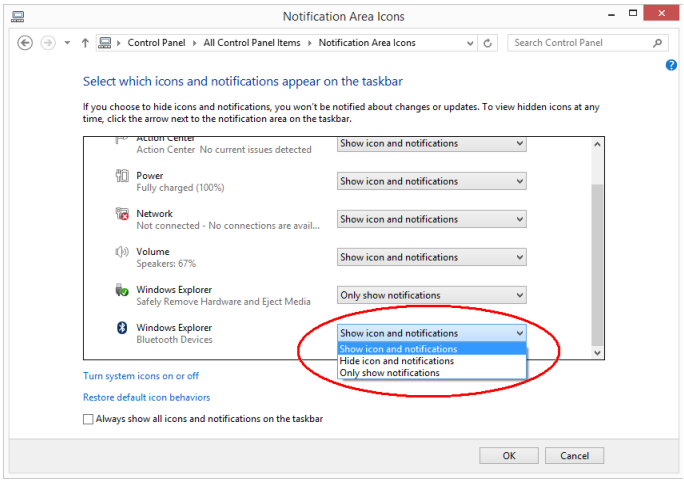
SMU-01533

- Select "Customize icons on the taskbar".



SMU-01534

- Changed to "Show icon and notifications" the display status of Bluetooth icon. And then you click the "OK" button.



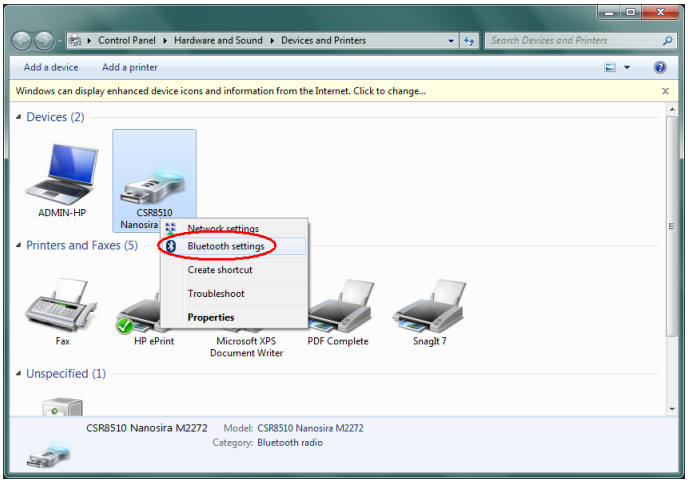
SMU-01535

- The Bluetooth icon is displayed on the taskbar.

SMU-01536

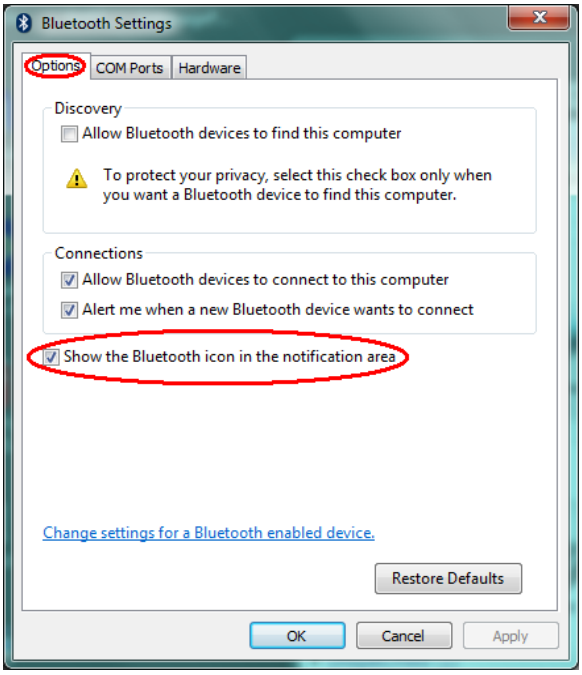
For Windows 7

- Select "Devices and Printers" from Start menu, right click on the icon of the Bluetooth module to select "Bluetooth settings".



SMU-01466

- Check the check box of "Show the Bluetooth icon in the notification area". Then click "OK".



SMU-01467

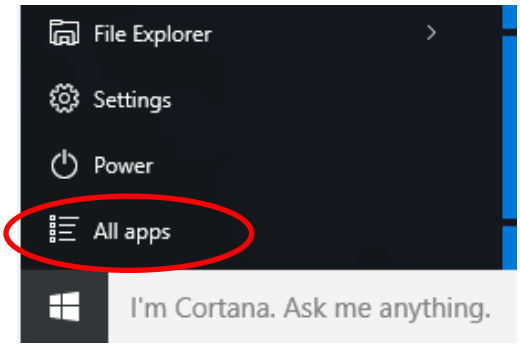
- The Bluetooth icon is displayed on the taskbar.

SMU-01468

1-2-3. Communication port setting of Bluetooth

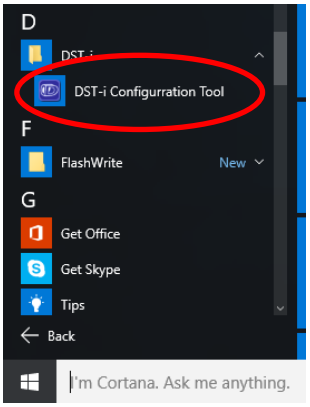
For Windows 10

- Right-click the Start button on the bottom left of the screen, and then select “All apps”.



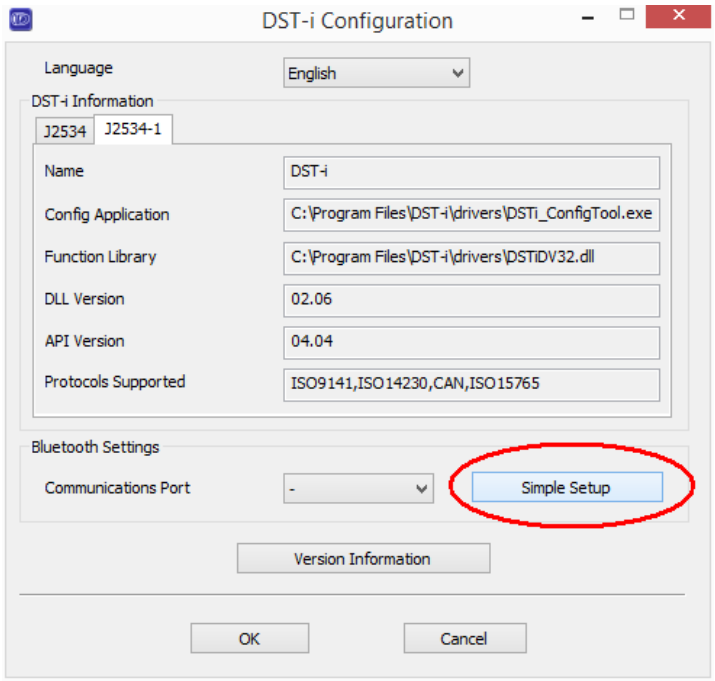
SMU-10055

- Select “DST-I” and then “DST-i Configuration Tool”.



SMU-10056

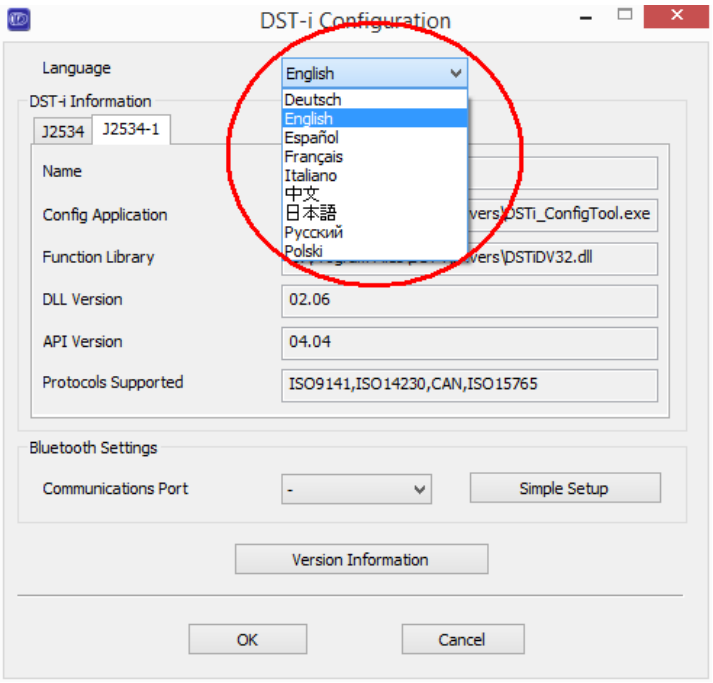
- Click “Simple Setup”.



SMU-01540

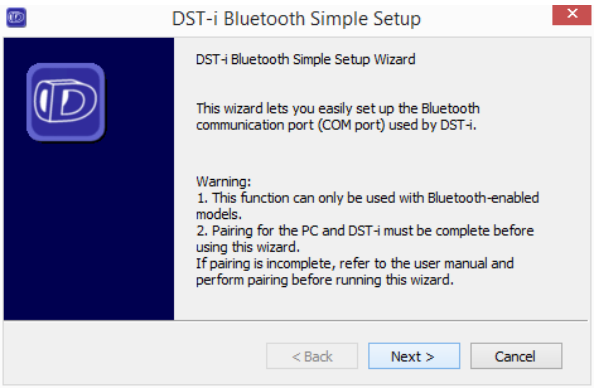
Notes

- You can select the language if necessary.



SMU-01541

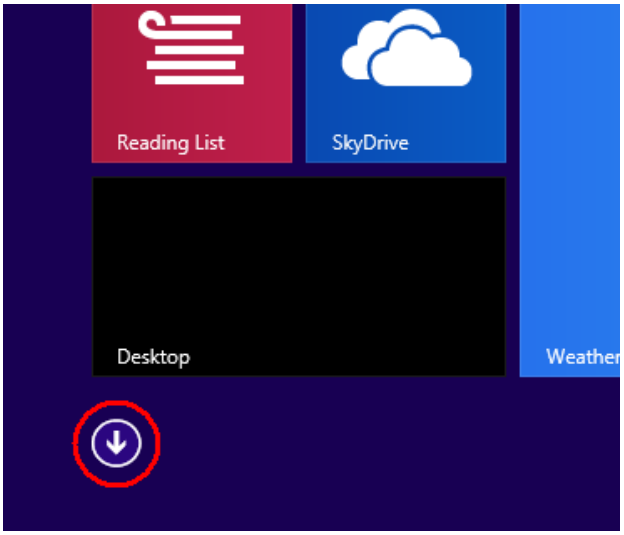
- [Simple Setup] Wizard starts. The following steps, please refer to the “DST-i Bluetooth simple setup” section.



SMU-01542

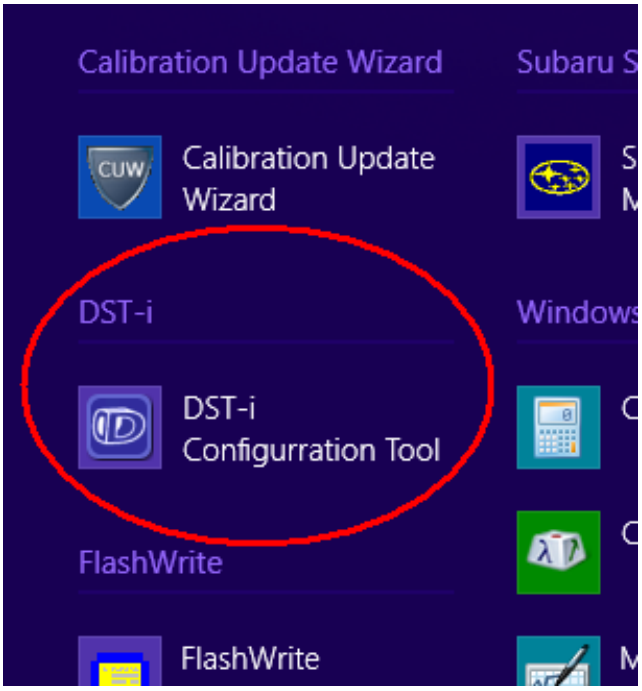
For Windows 8

- Click the button at lower left of the start screen.



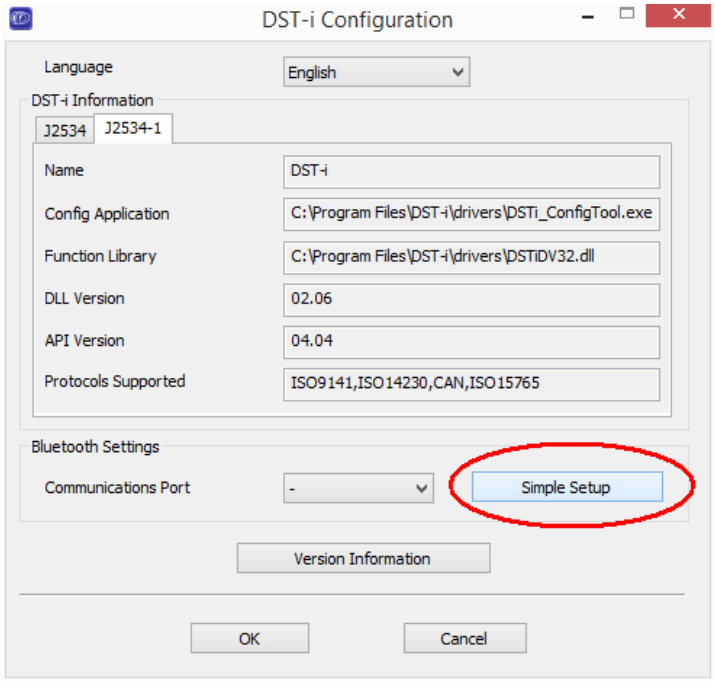
SMU-01538

- Click the "DST-I Configuration Tool" in the Apps screen.



SMU-01539

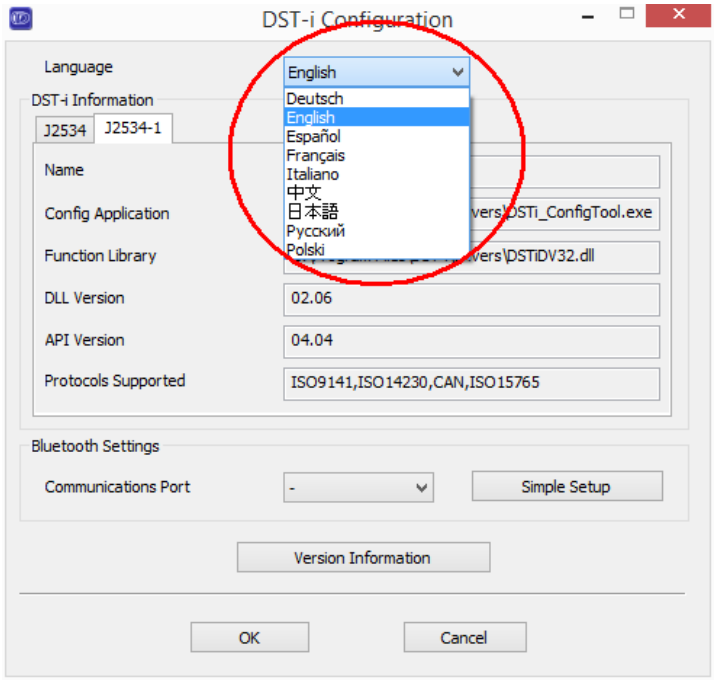
- Click [Simple Setup].



SMU-01540

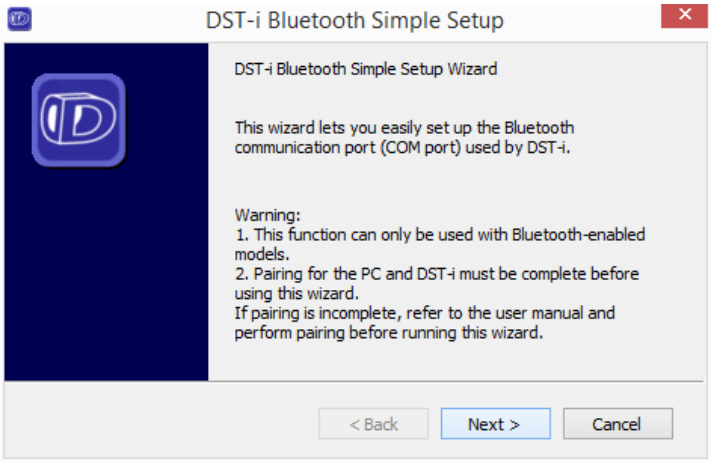
Notes

- You can select the language if necessary.



SMU-01541

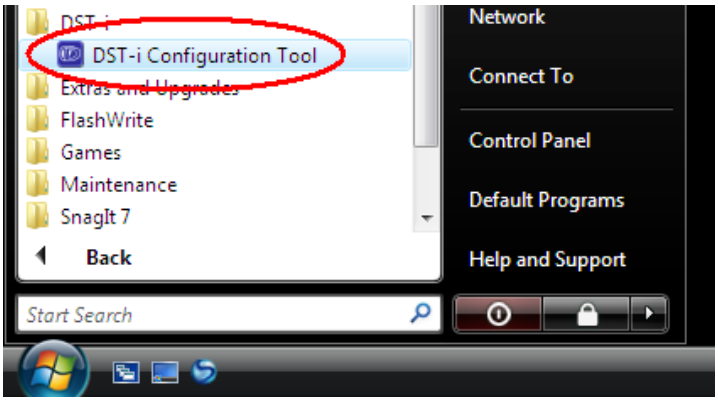
- [Simple Setup] Wizard starts. The following steps, please refer to the "DST-i Bluetooth Simple Setup" section.



SMU-01542

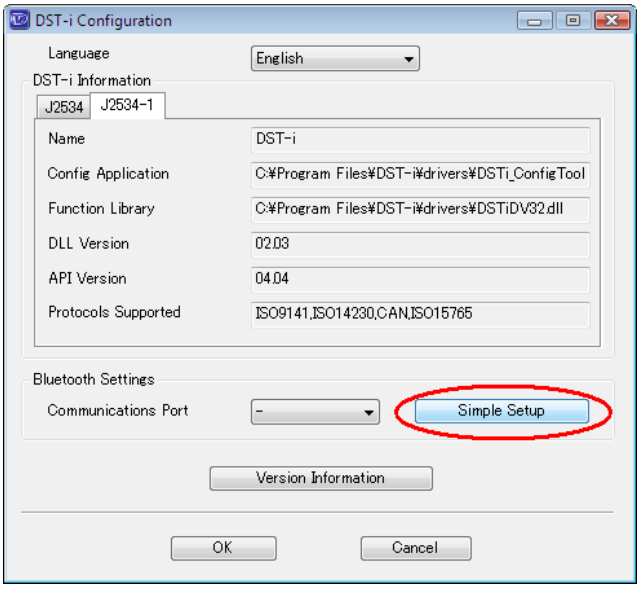
For Windows 7

- From the Start Menu, you start the next menu. "All Programs" → "DST-i" → "DST-i Configuration Tool"



SMU-01472

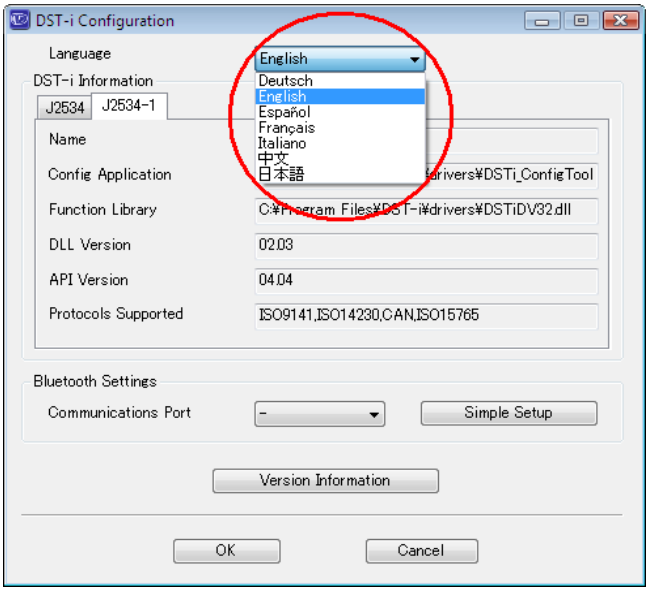
- Click [Simple Setup].



SMU-01474

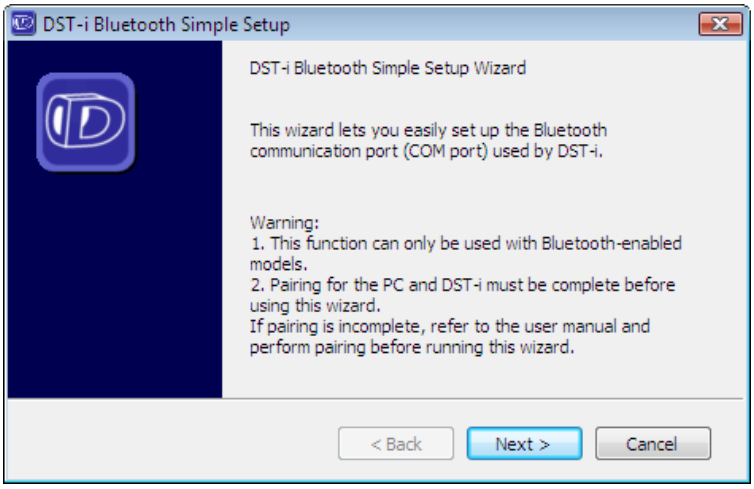
Notes

- You can select the language if necessary.



SMU-01473

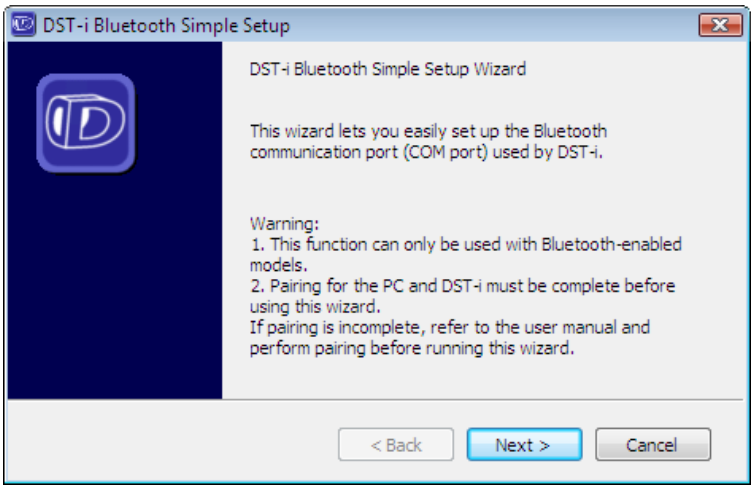
- [Simple Setup] Wizard starts. The following steps, please refer to the "DST-i Bluetooth simple setup" section.



SMU-01475

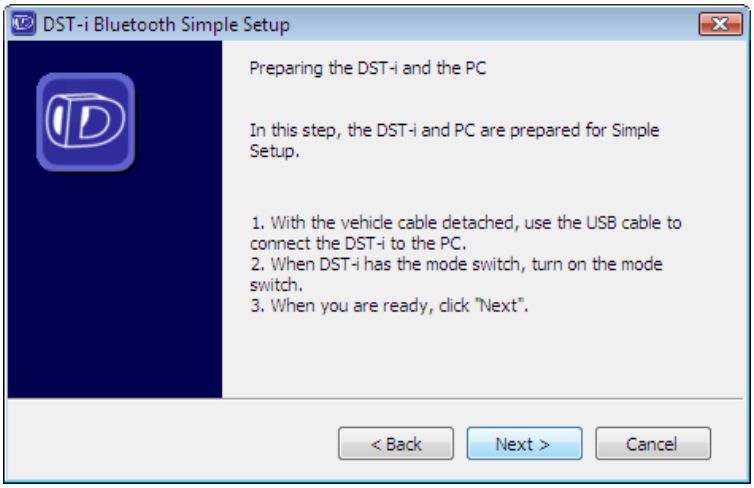
DST-i Bluetooth Simple Setup

- You confirm mention contents and click [Next].



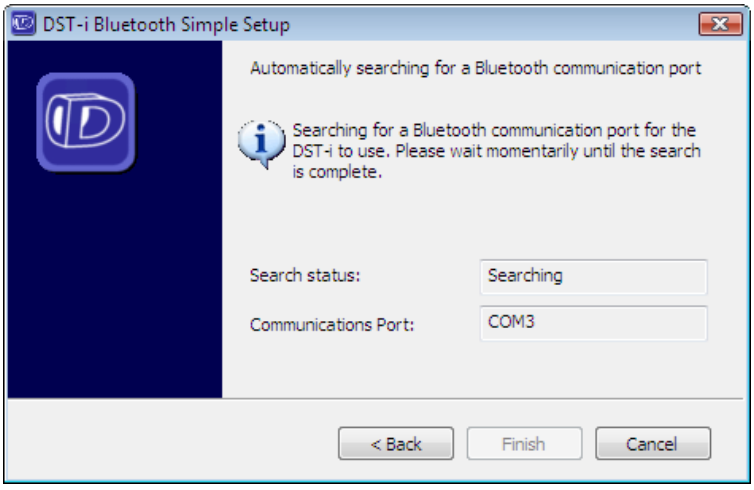
SMU-01475

- If DST-i and the preparations screen of the PC are displayed, you make the following preparations.
  - Take off a cable for vehicle connection. Connect DST-i to a PC with a USB cable.
  - Turn on a mode switch of DST-i. When DST-i has already started, please turn off a mode switch. Please reboot afterwards.
- After having been ready, click [Next].



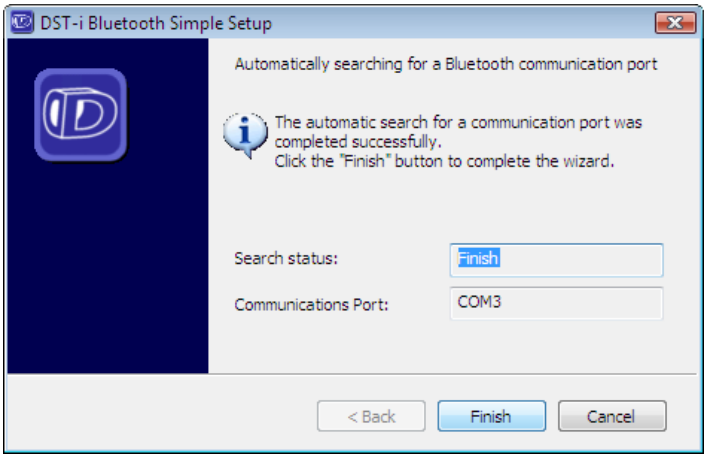
SMU-01476

- An automatic search of the Bluetooth COM port begins. Wait for a while until it is completed.



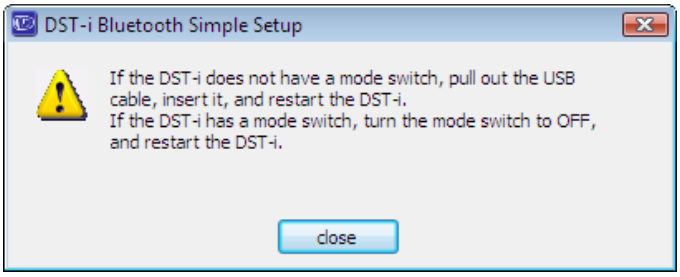
SMU-01477

- After a completion screen of the automatic detection of the Bluetooth COM port was displayed, you confirm a port number listed in the COM port. Click [Finish].



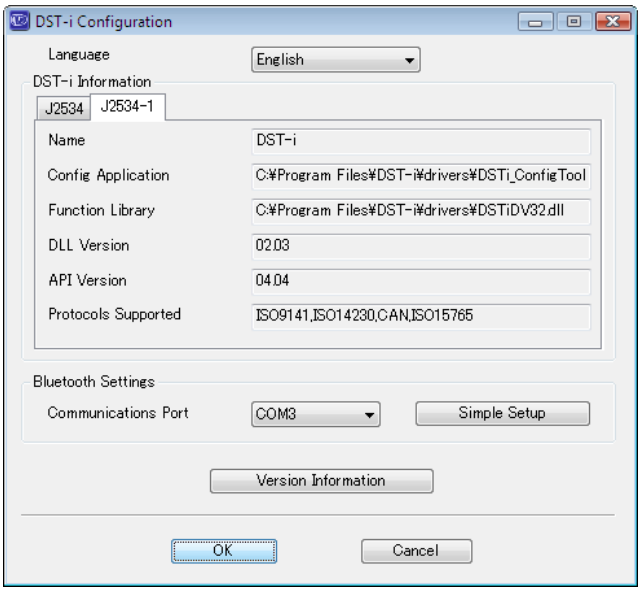
SMU-01478

- After instructions dialogue switching on DST-i again was displayed, Turn off a mode switch of DST-i. Turn on a mode switch afterwards.



SMU-01479

- You confirm that a communication port of the Bluetooth setting is changed. Click [OK].



SMU-01480

Notes

- When change the USB port of the PC to connect Bluetooth USB adapter, the Bluetooth COM port is changed. When you change the USB port of the PC, it is necessary to perform [Communication Port Setting of Bluetooth] in the procedure.

Important

- When it is finished without click [OK], the setting is not reflected.

1-3. A confirmation item and necessary measures when a problem occurred at the time of DST-i use

1-3-1. When cannot communicate with vehicle

Confirmation item	Action Required
Problem with the connection of Datalink Cable	Please make sure if the Datalink Cable is connected securely.
Problem with the connector pin of Datalink Cable (e.g. deformation)	Please make a repair request to the shop which you purchased.
Problem with the Datalink Cable itself (e.g. cable disconnection)	Please replace with the new Datalink Cable.
Indication of the update screen of DST-i	Click [OK] or [Next], and please update it.
Others than the above	Please contact SUBARU CORPORATION Customer Service Division, Technical service department, diagnosis system charge.

1-3-2. When cannot communicate with PC

Confirmation item	Action Required
Problem with the connection of USB cable	Please make sure if the USB cable is connected securely.
Problem with the USB driver	Please reinstall the USB driver.
Problem with the USB port on PC side	Please change the USB port.
Problem with the USB cable itself (e.g. cable disconnection)	Please replace with the new USB cable.
Confirmation of the interface box	Refer to "Selection of the interface box used". Interface box to use settings, please to DST-i.
Others than the above	Please contact SUBARU CORPORATION Customer Service Division, Technical service department, diagnosis system charge.

1-3-3. When Error detection indicator turns on or it flashes on and off

Confirmation item	Action Required
Restart of DST-i	Disconnect USB cable and Datalink cable, Please restart DST-i.
When even if a power supply restart, an error detection indicator turns on or it flashes on and off	Please contact SUBARU CORPORATION Customer Service Division, Technical service department, diagnosis system charge.

2. Before starting diagnostics

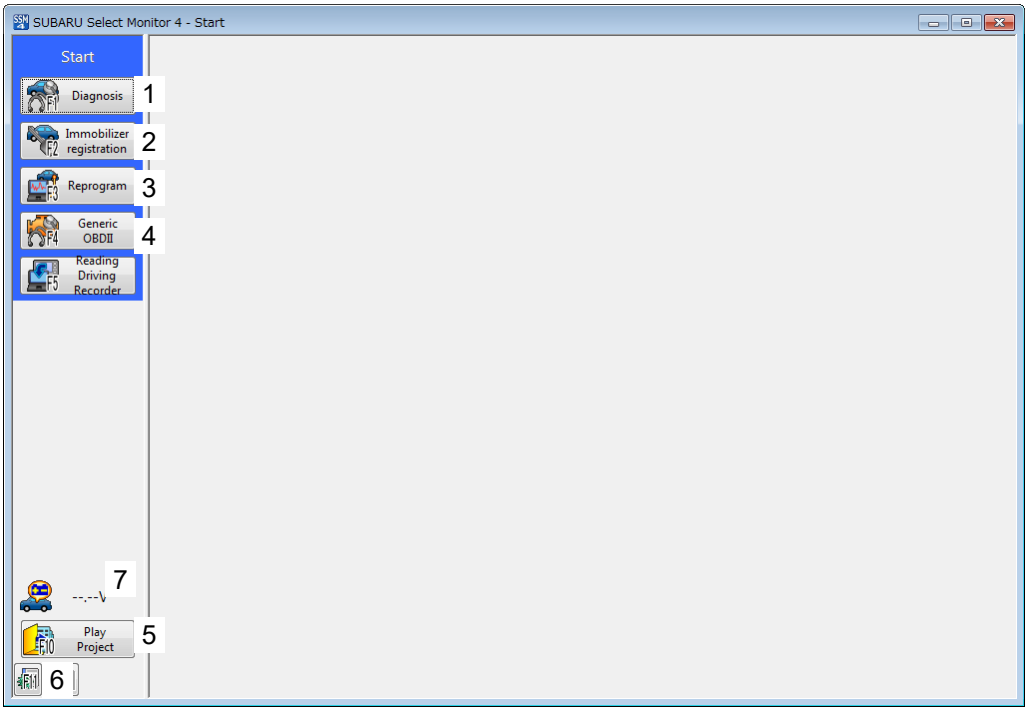
2-1. Common screen layout

2-1-1. Menu buttons

The following sections describe the operations that be performed from the start menu screen, main menu screen, and select function screen.

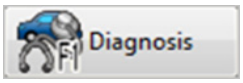
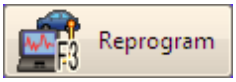
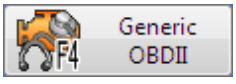
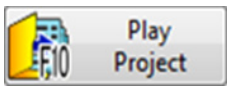
Start menu screen

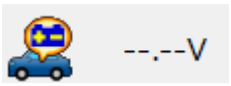
Start menu screen



SMU-10023

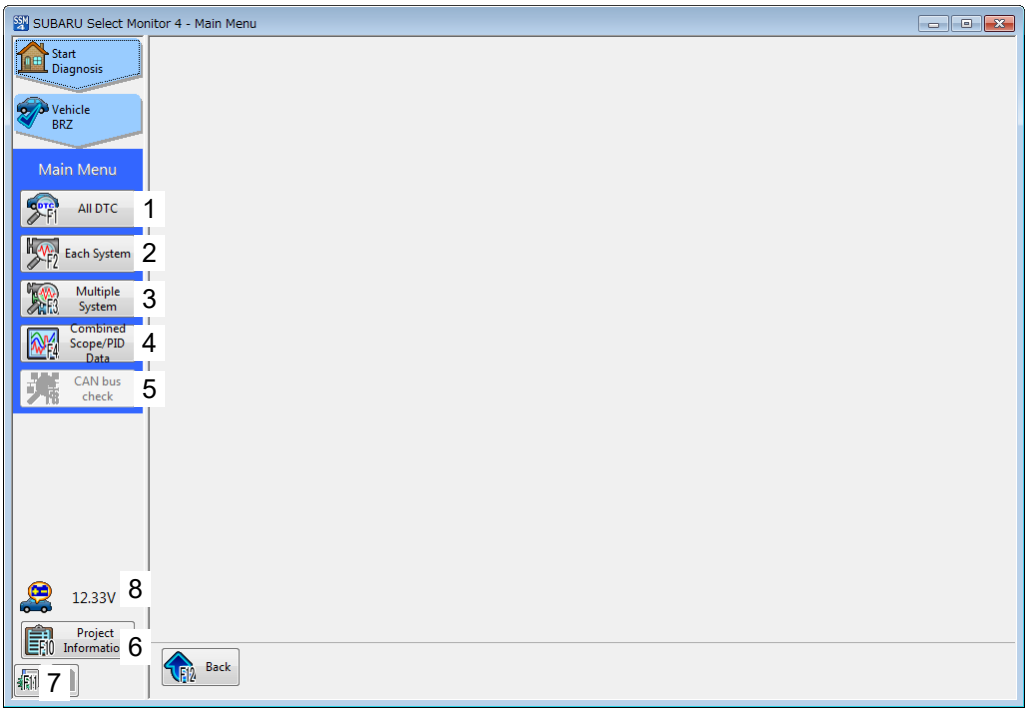
Operating instructions

1		{Diagnosis} Select the vehicle you want to diagnose and start fault diagnostics. Refer to “6. Diagnosis” for more information.
2		{Immobilizer Registration} This enables you to register immobilizers. Refer to "Immobilizer Registration Manual" for more information on registering immobilizers.
3		{Reprogram} The SSM4 has a pass-thru (J2534-1) reprogram function. Refer to “20. Guideline for reprogramming procedure” for more information.
4		{OBD System} Vehicle fault diagnosis can be performed by checking the OBD system control parameters. Refer to “23. OBD System” for more information.
5		{Review Projects} This enables you to manage and check project data from previous diagnostics. Projects are diagnostics records containing saved data and vehicle information previously diagnosed. Refer to “4. Project” for more information.
6		{Options} These functions enable you to save data and configure various settings. Refer to “5. Options” for more information.

7		{Battery Voltage Indicator} This displays the +B terminal voltage detected by the DST-i via the data link connector of the vehicle. The voltage is not displayed on the Start menu screen.

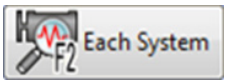
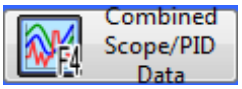
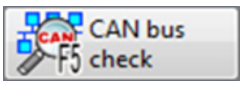
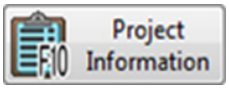
Main menu screen (after selecting “Diagnosis”)

Main menu screen (after selecting “Diagnosis”)



SMU-10024

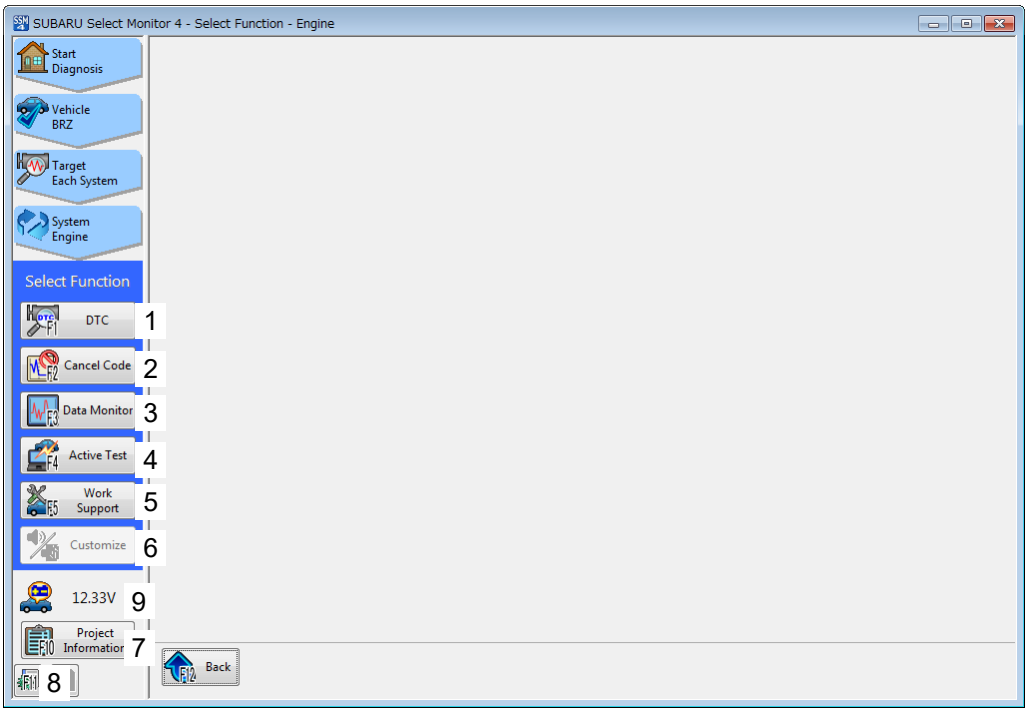
Operating instructions

1		{All DTC Inspection} This displays the fault detection state of the control module in all control systems and the DTCs representing the details of the fault. Refer to “7. All DTC inspection” for more information.
2		{Individual System Inspection} This enables you to select individual systems from control systems compatible with SSM4 and display input and output data into/from control modules and information such as the stored DTCs. This also enables you to delete DTCs stored in the control module, perform inspections while manually driving the actuator, and configure control module settings. Refer to “8. Individual system inspection” for more information.
3		{Multiple System Inspection} This enables you to measure both control data and input and output data into/from the control module in multiple control system compatible with SSM4 at the same time. Refer to “15. Multiple system inspections” for more information.
4		{Combined Scope/PID Data} This enables you to measure both analog data and output data into/from the control module at the same time when using an oscilloscope probe. Refer to “19. Combined Scope/PID Data” for more information.
5		{CAN bus check} This enables you to check the ECU connected to the CAN bus and also check the communication state of each system. Refer to “21. CAN bus check” for more information.
6		{Review Projects} This enables you to manage and check project data from previous diagnostics. Projects are diagnostics records containing saved data and vehicle information previously diagnosed. Refer to “4. Project” for more information.
7		{Options} These functions enable you to save data and configure various settings. Refer to “5. Options” for more information.

8		{Battery Voltage Indicator} This displays the +B terminal voltage detected by the DST-i via the data link connector of the vehicle.

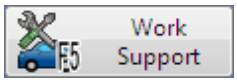
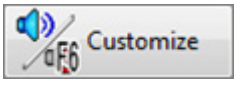
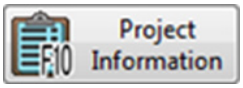
Select function screen (after selecting “Each System”)

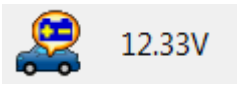
Select function screen (after selecting “Each System”)



SMU-10025

Operating instructions

1		{DTC} This enables you to check DTCs stored in control modules. Refer to “9. DTC” for more information.
2		{Cancel code} This enables you to check cancel codes stored in control modules. Refer to “10. Cancel code” for more information.
3		{Data Monitor} This enables you to measure control data and input and output data into/from the control module in the control system compatible with SSM4. This enables you to display the digital data as well as display data in graphs. Refer to “11. Data monitor” for more information.
4		{Active Test} This enables you to manually drive the actuator to check operation in control systems that are compatible with SSM4 and support the active test function. This enables you to run the active test while also running the data monitor. Refer to “12. Active test” for more information.
5		{Work Support} Various items of utilities are available. Refer to “13. Work Support” for more information.
6		{Customize} This enables you to configure the operation details, operation time, and so on for the actuator controlled by the body integration unit or other control module. Refer to “14. Customize” for more information.
7		{Review Projects} This enables you to manage and check project data from previous diagnostics. Projects are diagnostics records containing saved data and vehicle information previously diagnosed. Refer to “4. Project” for more information.
8		{Options} These functions enable you to save data and configure various settings. Refer to “5. Options” for more information.

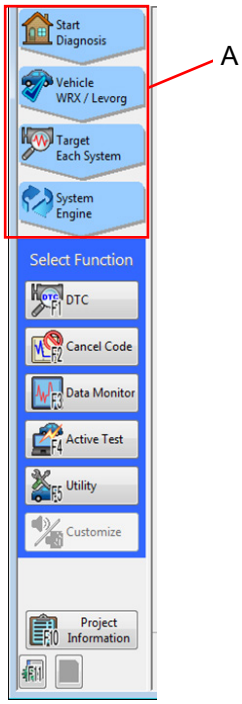
9		{Battery Voltage Indicator} This displays the +B terminal voltage detected by the DST-i via the data link connector of the vehicle.

2-1-2. Basic operation

The following section describes the basic operations that can be performed on each screen.

Menu display area

Menu display area (Ex.)



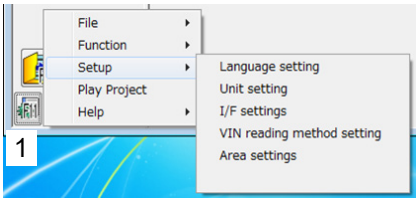
SMU-00004

Screen transitions from the start menu screen are displayed in the <A> screen transition display area as a history.

- Click the arrow button to return to the particular screen.

Options menu

Options menu (Ex.)



SMU-00005

Click the <1> to open the options menu.

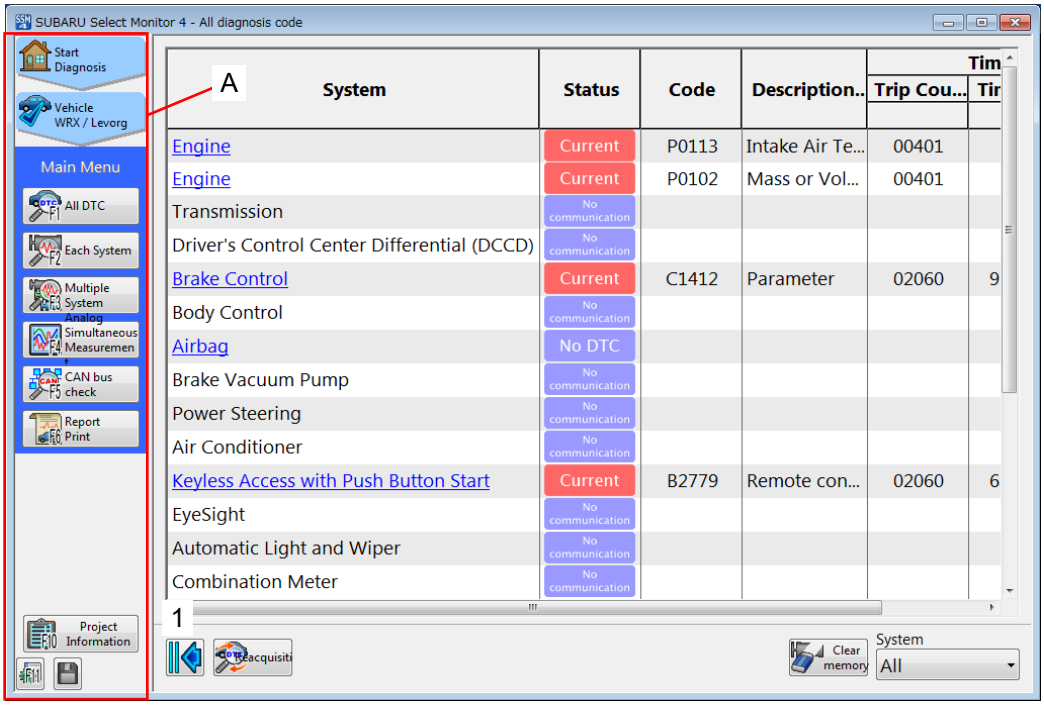
Move the cursor over menu items marked with arrows to expand the menu.

- Select and click the item to execute the particular function.

Button to turn the menu display area on and off

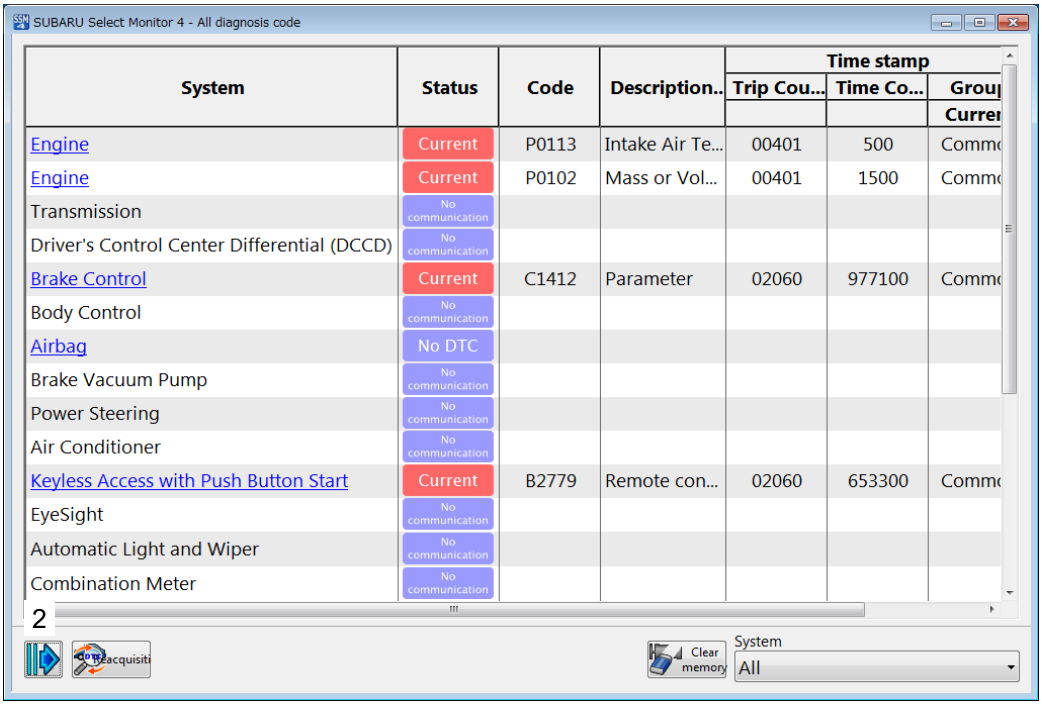
On each diagnosis screen, click either the <1> or the <2> to turn on and off the <A> display menu area.

Screen when displayed (Ex.)



SMU-00006

Screen when not displayed (Ex.)



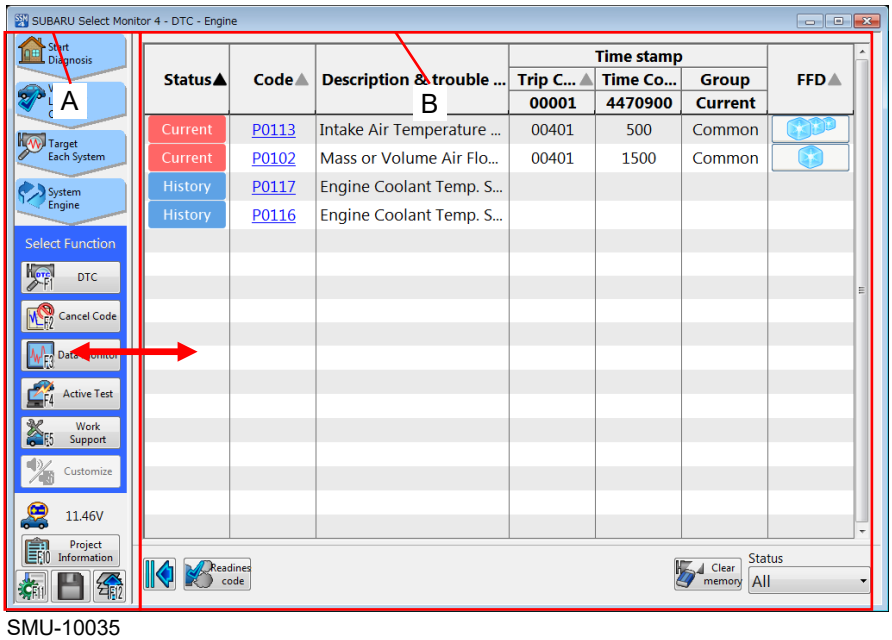
SMU-00007

Keyboard operation

Buttons and lists can be operated and selected items moved from the keyboard.

- The movable area of selected items is divided mainly into Area 1 and Area 2.
  Items can be moved between the areas by pressing Ctrl key and Tab key at the same time.

Moving a selected item between the areas using Ctrl key and Tab key (Ex.)



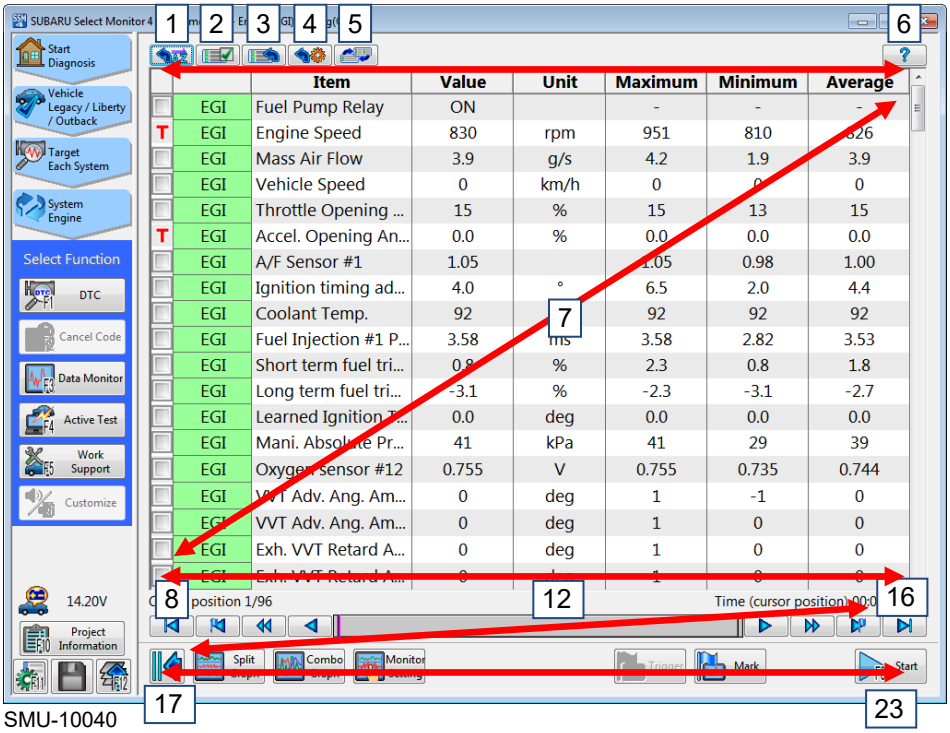
SMU-10035

<A> Area 1

<B> Area 2

- Pressing the Tab key can move a selected button or list in the area.

Moving a selected item using the Tab key (Ex.)



SMU-10040

The Tab key moves the selected item from left to right.

If the selected item cannot move to the right, it moves in the downward direction.

After the selected item moves to <23>, it returns to <1>.

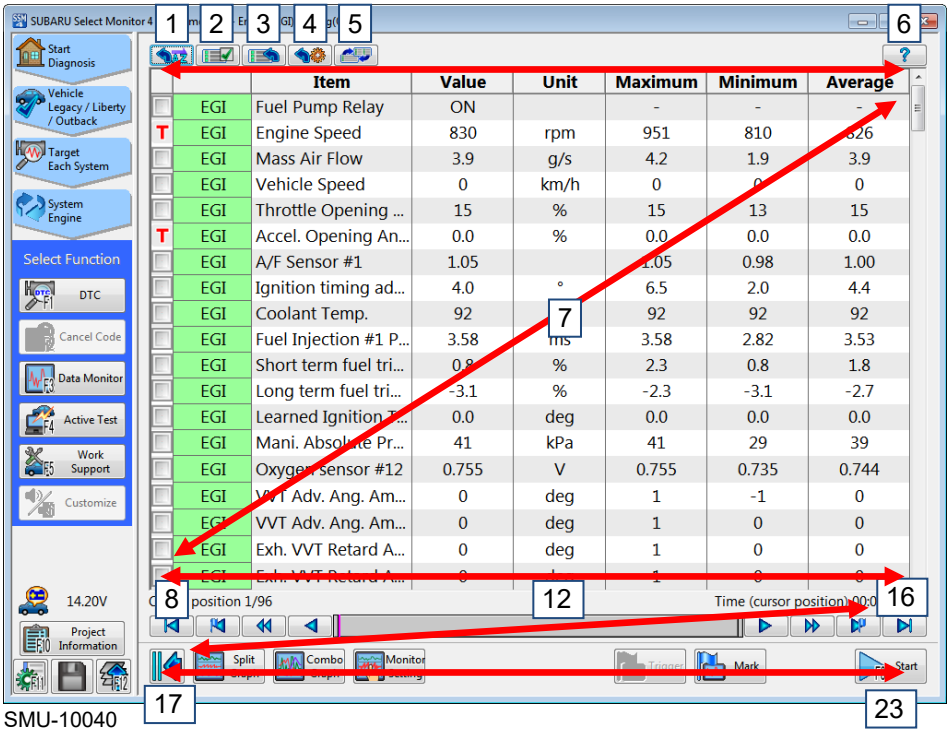
Movement to the opposite direction is performed by pressing the Tab key and Shift key at the same time.

To press a button, set the button to the selected state and then press the Enter key.

For the items such as <7> and <12> that can be operated, the contents of the item can be operated by setting the item to the selected state and pressing the cross key. To exit the operation, press the Tab key or the Shift + Tab keys.

- Pressing the cross key on the keyboard can move the selected button or list in the area.

Moving a selected item using the cross key (Ex.)



SMU-10040

Using the [→] and [↓] keys moves the selected item in the same way as using the Tab key.

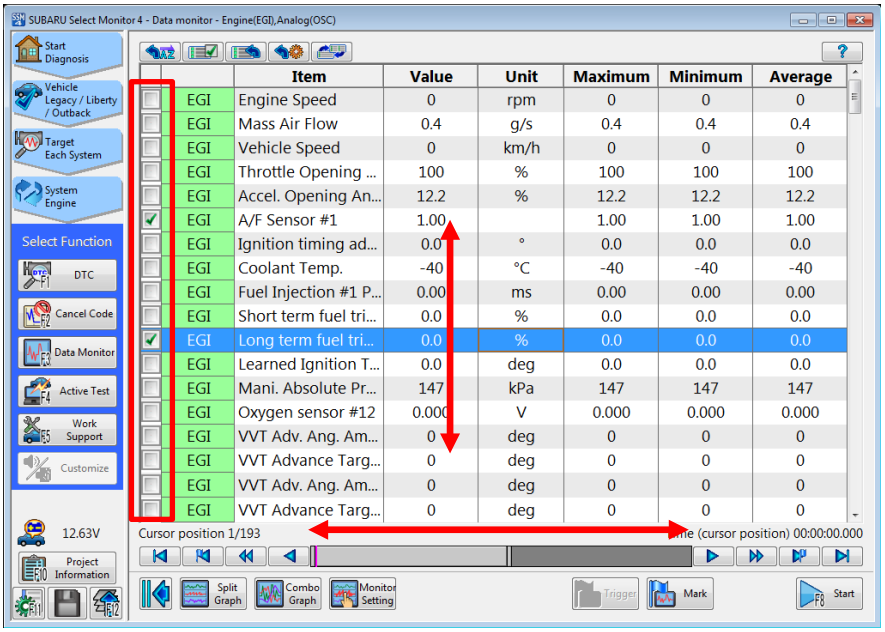
Using the [←] and [↑] keys moves the selected item in the same way as using the Shift + Tab keys.

To press a button, set the button to the selected state and then press the Enter key.

If the operable items such as <7> and <12> are selected during movement, the cross key is switched over and is used for operating the items. To exit this function, press the Tab key or the Shift + Tab keys.

- If the operable items such as a list is selected, the content in the item can be operated by pressing the cross key on the keyboard.

Operating the data monitor list (Ex.)



SMU-10065

With the data monitor list, the signal can be selected with the [↑] and [↓] keys, and the cursor can be moved with the [←] and [→] keys.

With the data monitor list, a checkmark can be put in the check box by pressing the Space key.

- This enables you to execute the function to press the F key on the keyboard without click button with a mouse if the F key is displayed on the lower left of the button.

Button that F key is displayed (Ex.)

SMU-00008

To return to the previous screen, press the F12 key.

3. Connecting and starting the SSM4

3-1. Connection method

Before staring fault diagnostics, connect the computer, DST-i, and vehicle you want to diagnose with the specialized cables.
You must use the data link cable and USB cable as part of the DST-i accessories to make the connections.

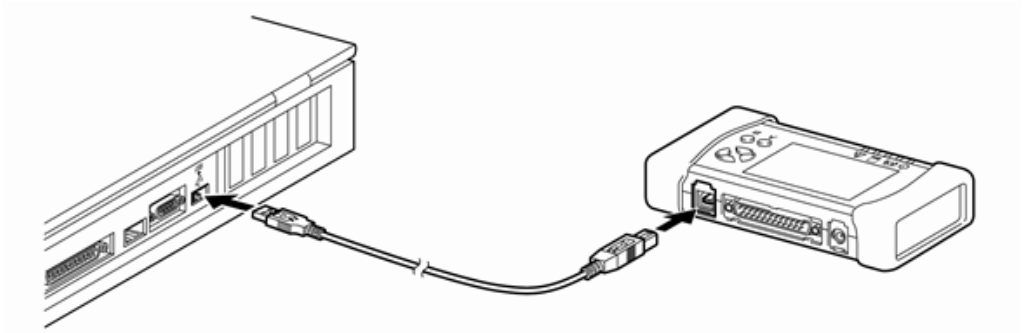
Caution

- Follow the connection sequence so as not to impact the vehicle.

- Connect the DST-i to the computer with the USB cable.

Notes

- Refer to the separate “DST-i Hardware Manual” for more information on connecting the USB cable.



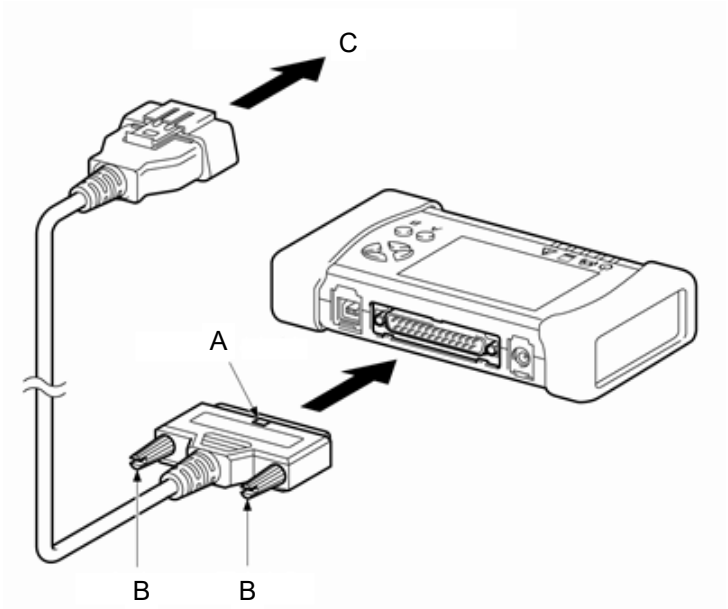
SMU-00009

- 1. First, connect the DST-i and the data link cable<A>, and secure the cable with the screws <B>.

- 2. Next, connect the data link cable<C> to the vehicle side diagnosis connector.

Caution

- Do not connect or disconnect the data link cable <A> while the DST-i and vehicle are connected. Doing so may cause trouble to the vehicle or DST-i.



SMU-00010

A: Notch (center)

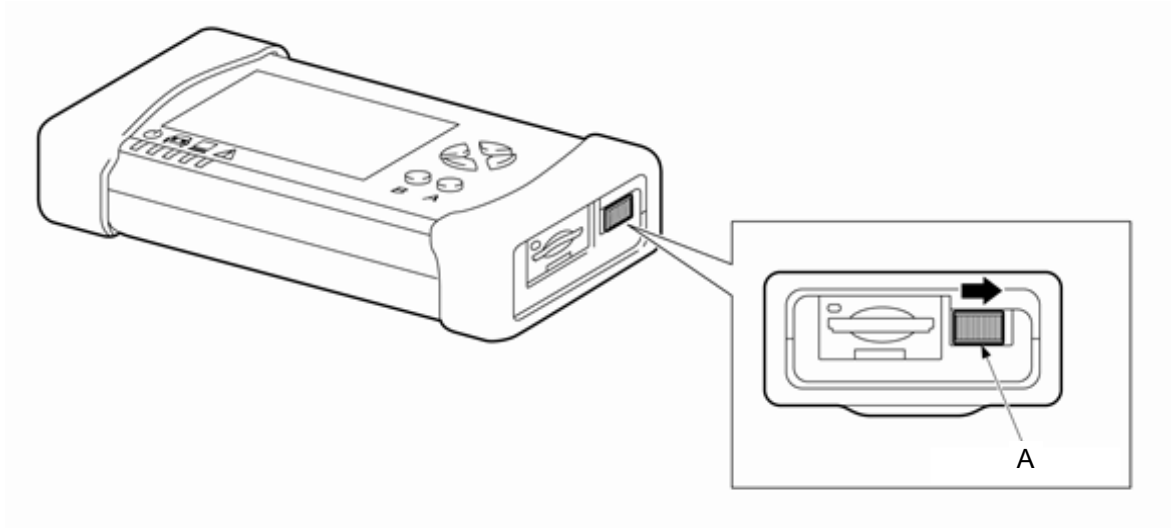
B: Secure the screws

C: Connect to the vehicle diagnostics connector

Notes

- Refer to the separate “DST-i Hardware Manual” for more information on connecting the data link cable.

- 3. Turn the <A> mode switch of DST-i on.



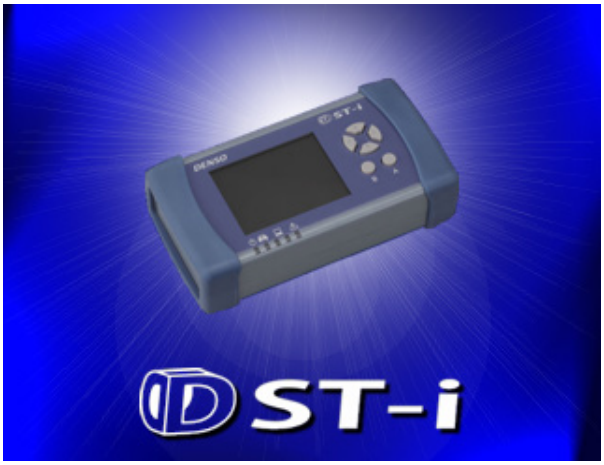
SMU-00011

A: Mode switch

Notes

- Turn the <A> mode switch on and the DST-i power indicator glows green.

- 4. The opening screen displays and the device remains in standby while displaying this screen.



SMU-00012

3-2. Starting

Start SSM4.

This enables you to start SSM4 either from the shortcut created on the desktop when installing or from the start menu.

3-2-1. Starting from the shortcut

Desktop

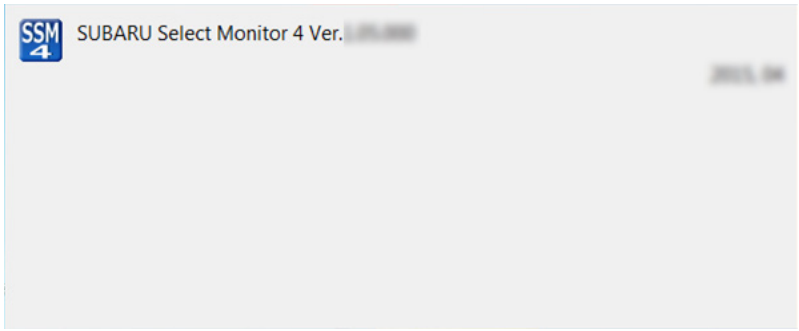
SMU-00013

- Double-click "Subaru Select Monitor 4" on the desktop to start SSM4.

  The start menu screen displays after the logo screen displays.

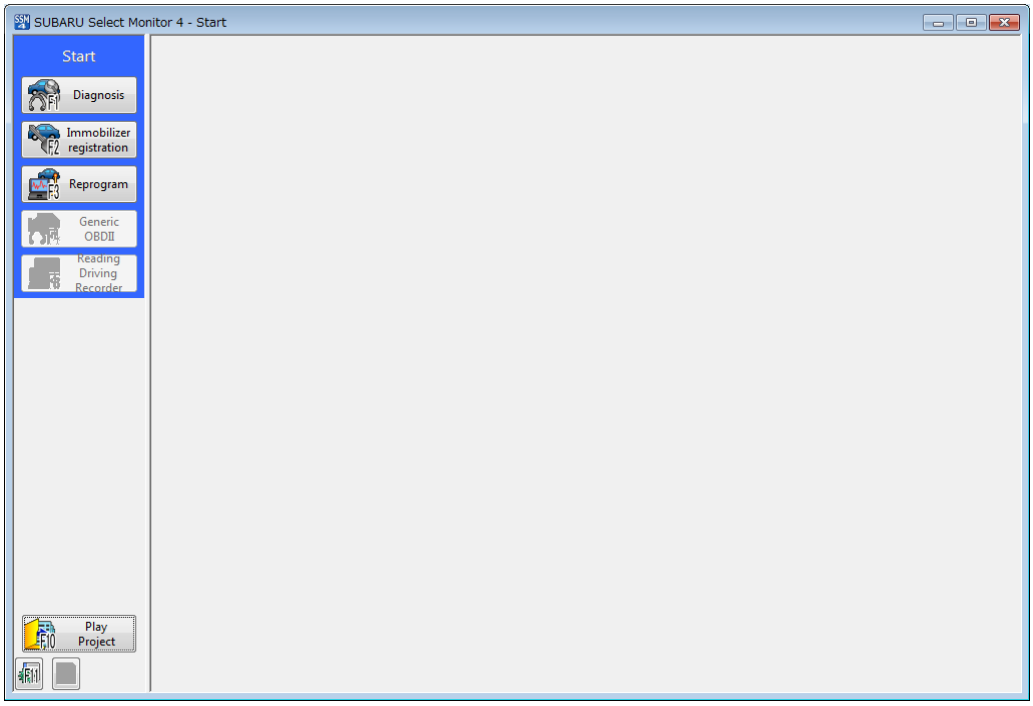
  Notes
  - The area select screen may display after the logo screen displays.
    In this case, click “OK” after selecting a proper area.
  - The license authentication screen may display after the logo screen displays.
    In this case, click “OK” after entering password in the product PW.
    Click “Skip” if you do not know the password.

Logo screen



SMU-00014

Start menu screen

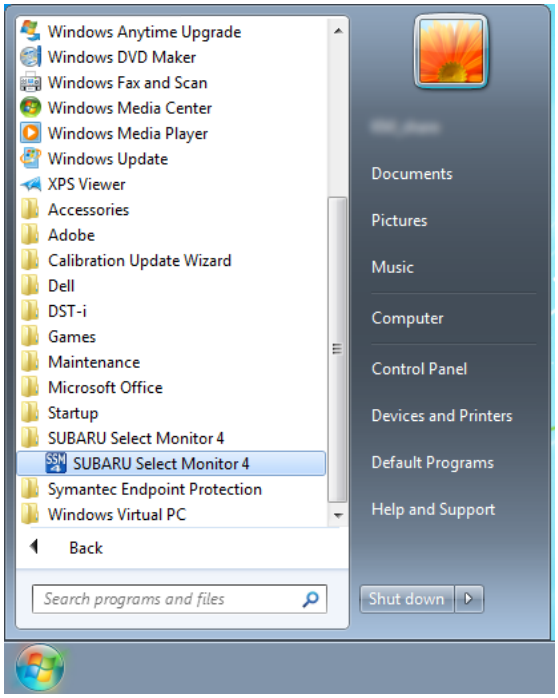


SMU-00015

3-2-2. Starting from the Windows start menu

Notes
- This section describes the procedure for Windows 7.

PC screen



SMU-00016

- From the Windows Start menu, select "All programs" - "Subaru Select Monitor 4" - "Subaru Select Monitor 4" to start SSM4.

  The start menu screen displays after the logo screen displays.

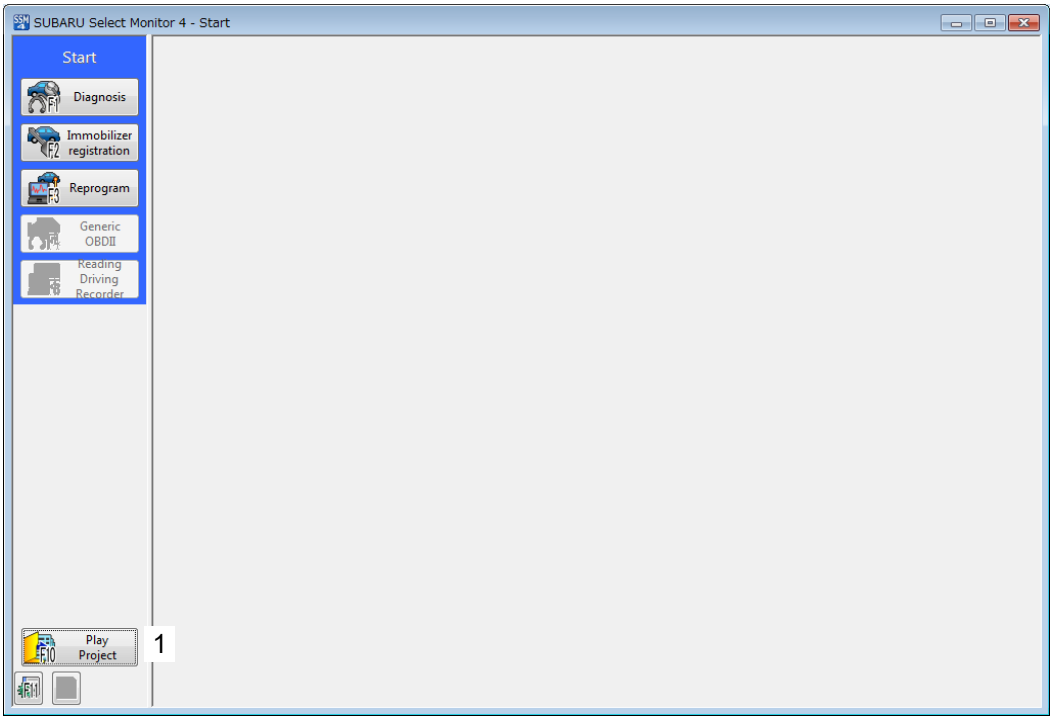
  Notes
  - The area select screen may display after the logo screen displays.
    In this case, click “OK” after selecting a proper area.
  - The license authentication screen may display after the logo screen displays.
    In this case, click “OK” after entering password in the product PW.
    Click “Skip” if you do not know the password.

4. Project

This enables you to manage and check project data from previous diagnostics.

Projects make it possible to manage information and saved data on diagnosed vehicles as diagnostic records of each individual vehicle.

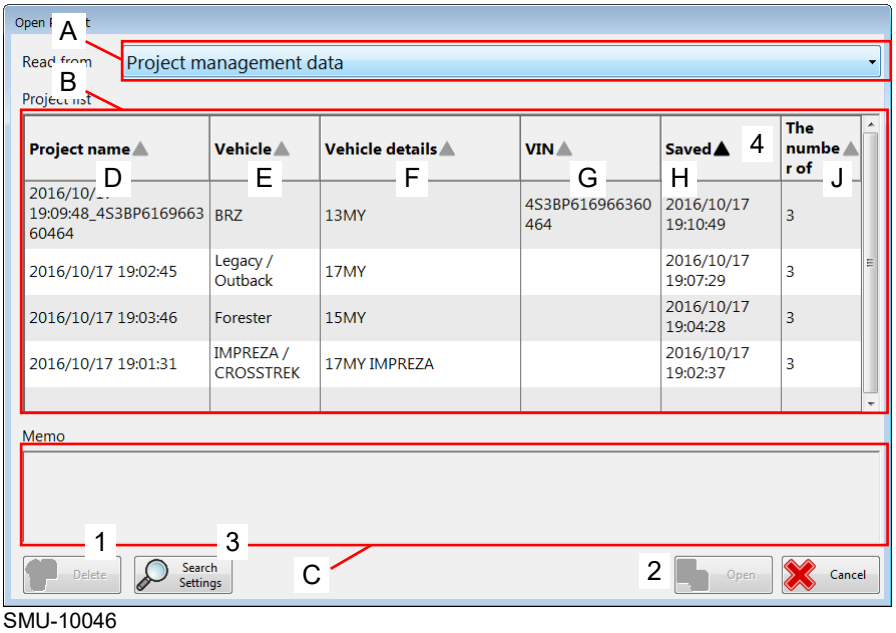
Start menu screen



SMU-00017

- Click <1> "Play Project"on the start menu screen to display the select data screen.

Select data screen

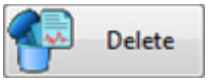
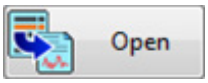
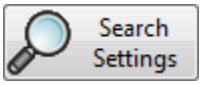


SMU-10046

Screen layout

A	Read from	This is a pull-down menu for selecting the project to load. Project management data: This displays the projects kept in the SSM4 in the project list. Desktop: This displays the exported project files that are located on the PC Desktop, in the project list. Reference: This displays the exported project files in optional folders in the project list.
B	Project list	This displays the projects stored from which data is loaded.
C	Memo	This field displays entered notes such as supplementary information on projects. Nothing is displayed if no memo have been entered.
D	Project name	This displays the project name.
E	Vehicle	This displays vehicle selected on the Vehicle selection screen.
F	Vehicle details	This displays model selected on the Vehicle selection screen.
G	VIN	This displays frame number selected on the Vehicle selection screen.
H	Saved	This displays the latest date and time that the project was updated.
J	The number of Data	This displays the number of the diagnosis results stored in the project.

Operating instructions

1		This deletes the selected project.
2		This opens the selected project.
3		This searches the project list for arbitrary projects.
4		This arranges and displays the data in ascending order.

- These buttons become operable after selecting a project from <A> “Read from” to load from the project list in the area for selecting data to load.

Notes

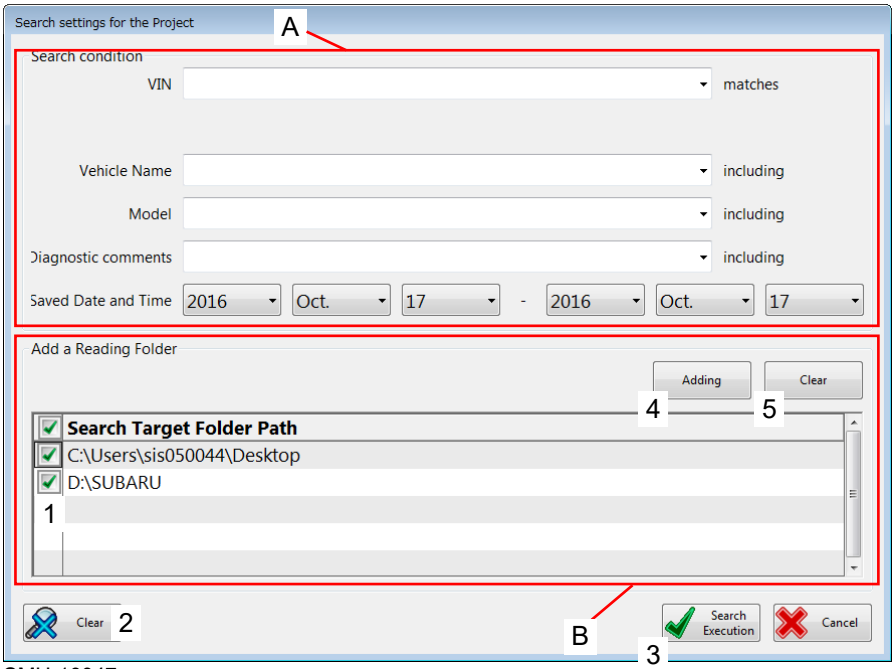
- Projects group and manage data from each function (e.g., DTCs, data monitor settings, etc.)
- A project is automatically created when starting diagnostics, if a project with the VIN of the concerned vehicle does not exist.
- If there already is a project with the VIN of the concerned vehicle, you can select that project when starting diagnostics, and add data from any new diagnostics to it.
- The information and data managed in projects is saved in SSM4. The export function is used to output that information and data as project files.
- The import function is used to import project files into SSM4.

4-1. Searching for projects

You can search the project list for arbitrary projects.

- Clicking <3> “Search Settings” on the Select data screen displays the Search settings for the Project screen.

Search settings for the Project Screen

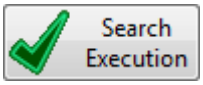


SMU-10047

Screen layout

A	Search condition	This area is for inputting conditions in order to narrow down project searches. The "VIN" field can be used only for exact match searches. The "Vehicle Name", "Model" and "Diag. comments" fields can be used for exact match searches or partial match searches. You can select the past input conditions from the pull-down menu.
B	Add a Reading Folder	You can add more than one folders that store exported files as target folders. If you select an arbitrary folder by clicking <4>, it will be added as a Target folder. If you put a checkmark in the left checkbox <1> of an added target folder name and click <5>, the folder will be removed from the list.

Operating instructions

1		Clicking this displays a checkmark. Clicking this again removes the checkmark. By putting a checkmark in the checkbox of a folder, you can add the folder to the targets.
2		This clears all checkmarks.
3		This executes the project search. The search results will be displayed on the Data selection screen of the project as a list.

- Input the project search conditions in the Search condition pane.
- Click <3> “Search Execution” to execute the search.

4-2. Opening projects

This enables you to open projects of previous diagnostics and view the details of the diagnostics.

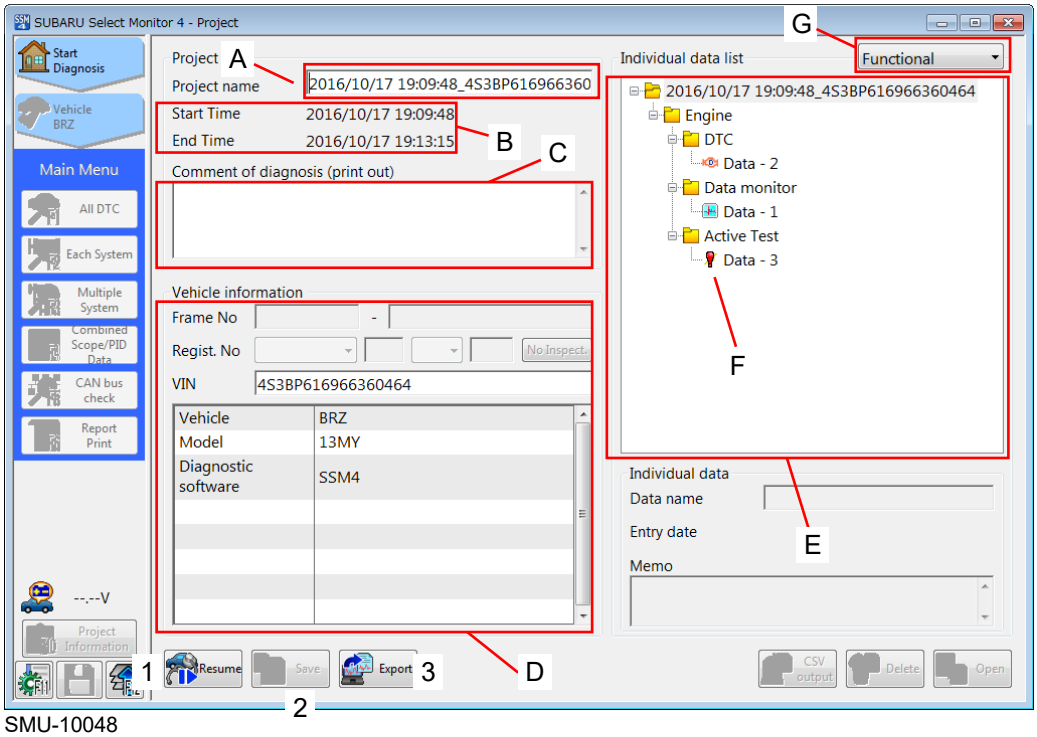
This also enables you to add memo to projects and change contents.

Notes

- When the exported project is read and displayed, each item including the project name and memo is grayed out and cannot be selected.

- After selecting a project on the select data screen, click <2> “Open” to display the project screen.

Project screen

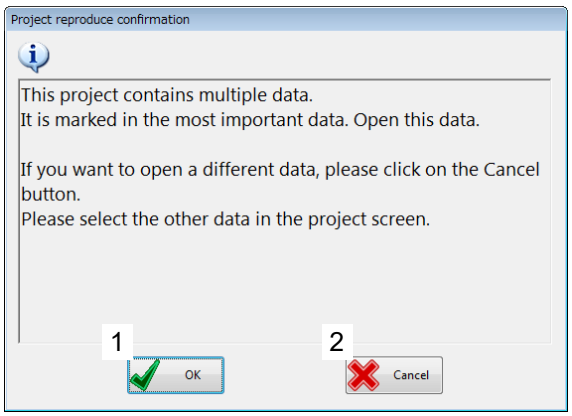


SMU-10048

Notes

- If the exported project data is played, “_Imp_****” is automatically added to the end of the project name and displayed.
- If an indication priority mark is attached to the diagnostic data in the project, the following message will appear. If you want to open the analysis screen of the flagged diagnostic data, click <1> “OK.” If you want to open the project screen, click <2> “Cancel.”

Project reproduce confirmation

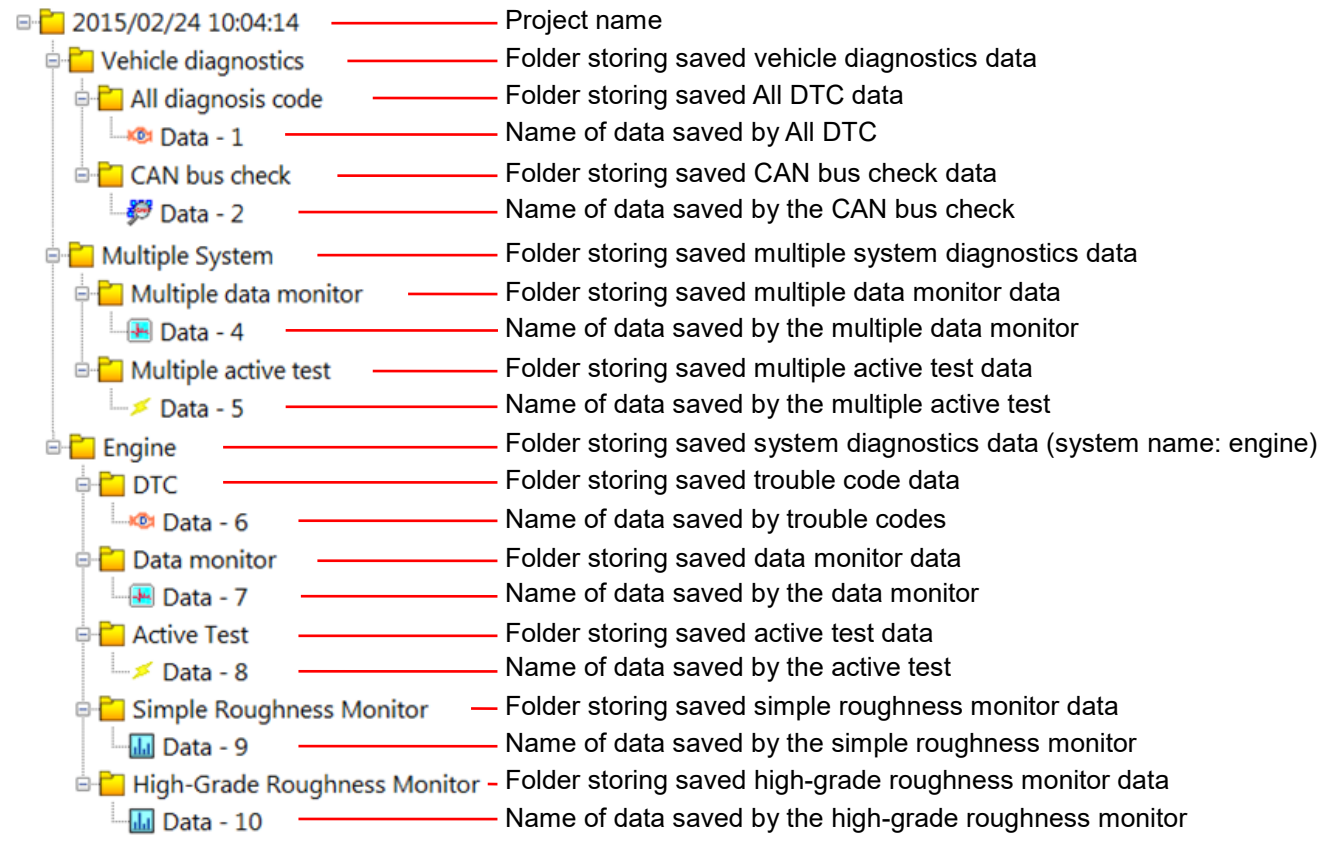


SMU-10049

Screen layout

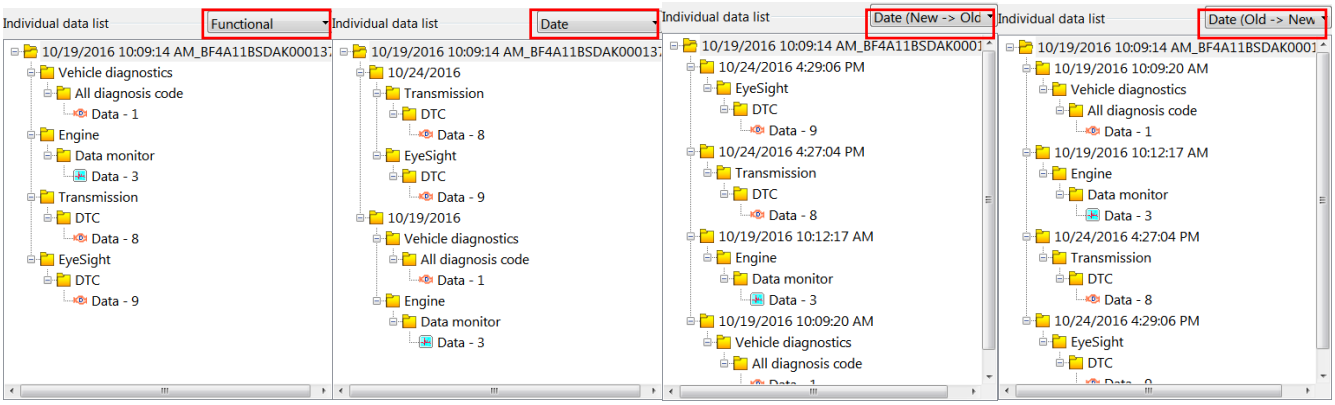
A	Project name	This is the project name currently displayed or used for diagnostics. The “Created date and time” + “Frame number” are automatically used for the project name. The project name can be changed.
B	Start Time End Time	This is the date from the start of diagnostics to the end of diagnostics for the project.
C	Diagnostic comments	This field displays optional details such as supplementary information on projects. This displays in the select data screen when opening projects, and so we recommend that you enter easily understood information.
D	Vehicle information	This is information (details selected and entered when selecting vehicles) on the vehicle for which diagnosis has been performed.
E	Individual data list	This is a list of various diagnostics results stored in the project.
F	Indication priority mark	The mark is added by clicking the icon of the diagnostic data. If the mark is attached, the analysis screen of the flagged diagnostic data directly appears when the project is opened the next time. If there is more than 1 set of diagnostic data in the project, a mark will automatically be attached to the latest diagnostic data.
G	Display method	This changes how the diagnostic results stored in the project are displayed.

Layout of the individual data list (example tree structure)



SMU-00021

Methods for displaying the individual data list



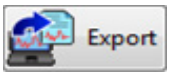
SMU-10050

Functional: Sorts and displays the diagnostic data into folders by function.

Date: Sorts and displays diagnostic data into folders by date.

Date(New->Old): Displays diagnostic data in reverse chorological order.

Date(Old->New): Displays the diagnostic data in chorological order.

1		This resumes diagnosis not finished.
2		This saves the details changed on the project screen to the project. This can only be clicked if changes have been made to the project.
3		This exports projects. This enables you to organize project data and all data files into one file.

4-2-1. Updating projects

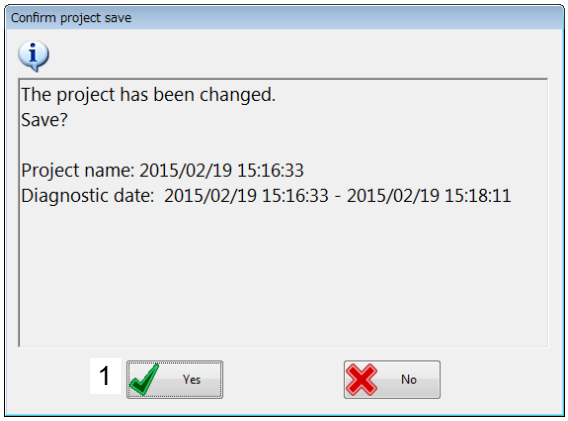
This enables you to overwrite and update projects after changing project details.

- The save confirmation screen displays when transitioning to another screen after changes have been made to a project.

  Alternatively, click <2> “Save” on the project screen to display the save confirmation screen.

  Notes
  - <2> “Save” cannot be clicked if no changes have been made on the project screen.

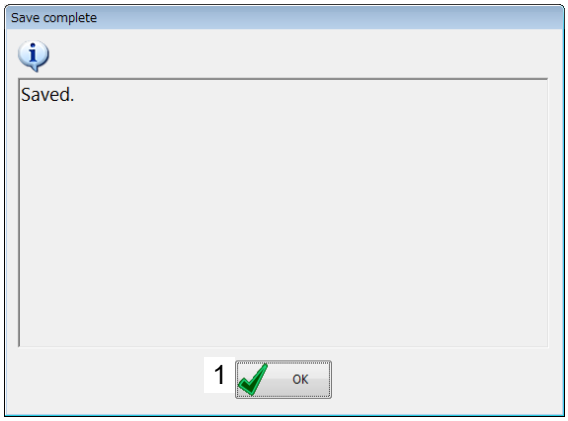
Save confirmation screen



SMU-00022

- Click <1> “Yes” on the save confirmation screen to display the completion screen.

Completion screen



SMU-00023

- Click <1> “OK” on the completion screen to close the screen.

4-2-2. Exporting projects

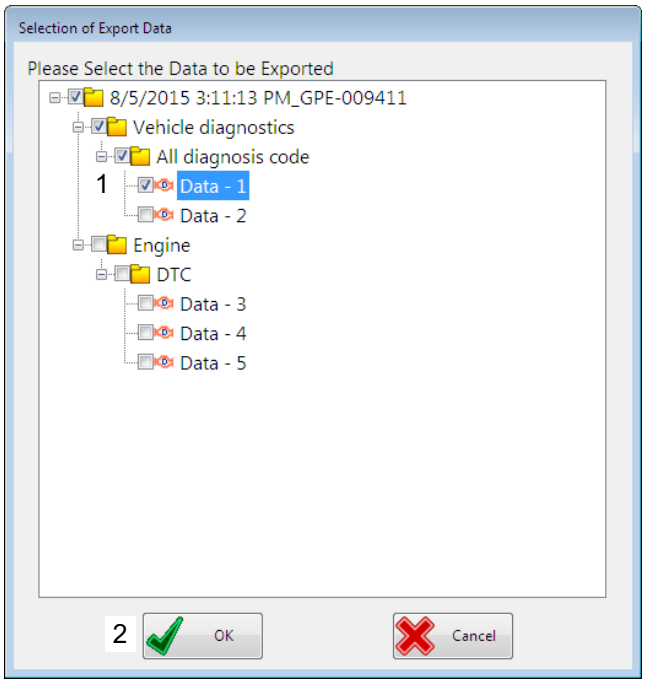
This enables you to organize project data and all data files saved by various diagnostics functions into one file and save the file to the desired location (folder). Use this to transfer project files to other computers.

Notes:

- The contents of the exported project files cannot be changed as they are. To change the contents, import the exported project files into SSM4.

- Click <3> “Export” on the project screen to Selection of Export Data Screen.

Selection of Export Data Screen



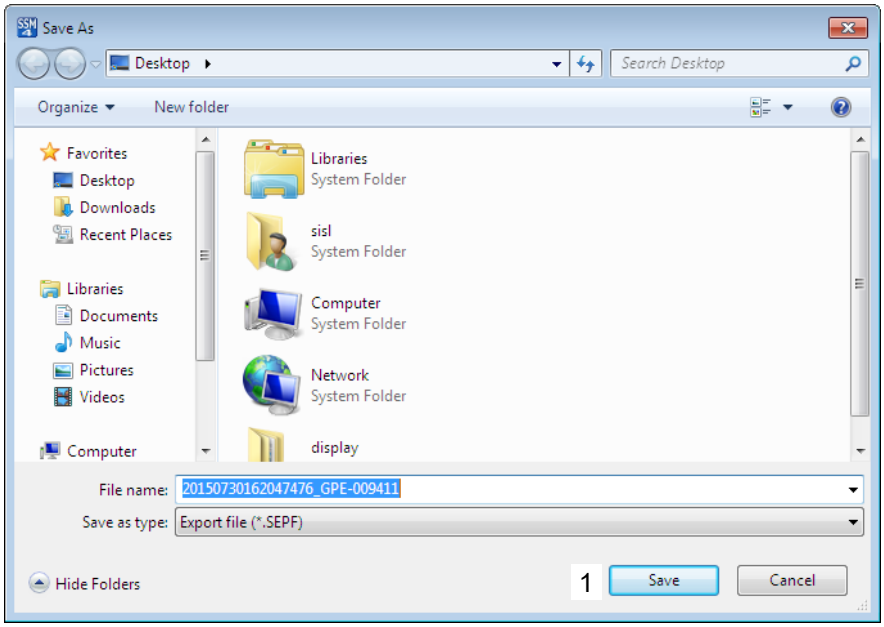
SMU-00212

- In Selection of Export Data screen, please select the data you want to export. Please click "OK". Then the data save screen is displayed. (As an example, "Data-1" is selected.)

Notes

- Please remove the check from you do not want to export data.
- The save confirmation screen displays when project details have been changed.

Data save screen



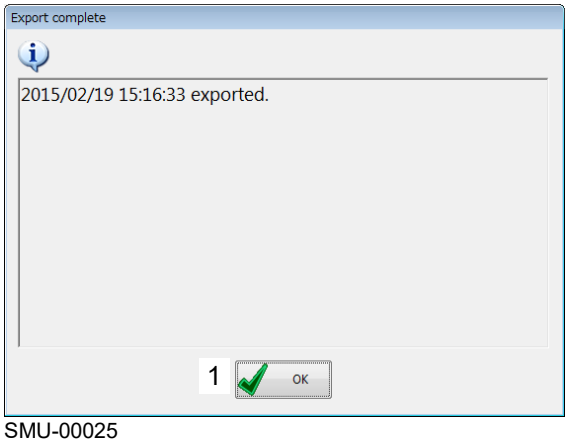
SMU-00216

Notes

- The default file name will be referred to “date time _ VIN” when the VIN has been set.
  It will display “date time_Vehicle_Model” when the VIN is not set.
- When the data is individually selected and exported in the Selection of Export Data Screen, “_Selected” will automatically be added to the end of the file name.

- After selecting the desired save location, click <1> “Save” on the data save screen to display the completion screen.

Completion screen



SMU-00025

- Click <1> “OK” on the completion screen to close the screen.

4-2-3. Resume diagnostics

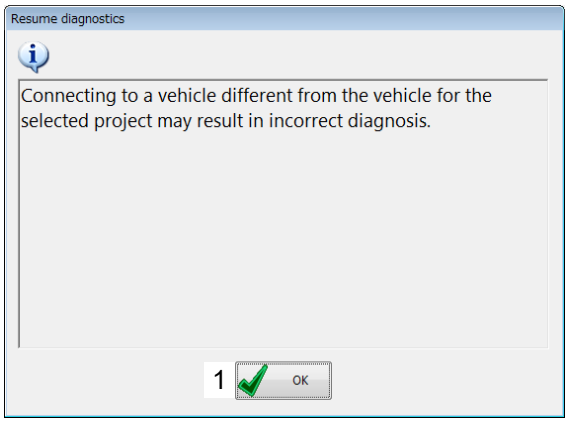
This enables you to restart diagnosis not yet finished for the loaded project.

Notes

- Diagnostics can be resumed only for projects stored in the SSM4 or imported there. (Diagnostics cannot be resumed for projects stored elsewhere using the Export function or exported project data.)

- Click <1> “Resume” on the project screen to display the resume diagnostics confirmation screen.

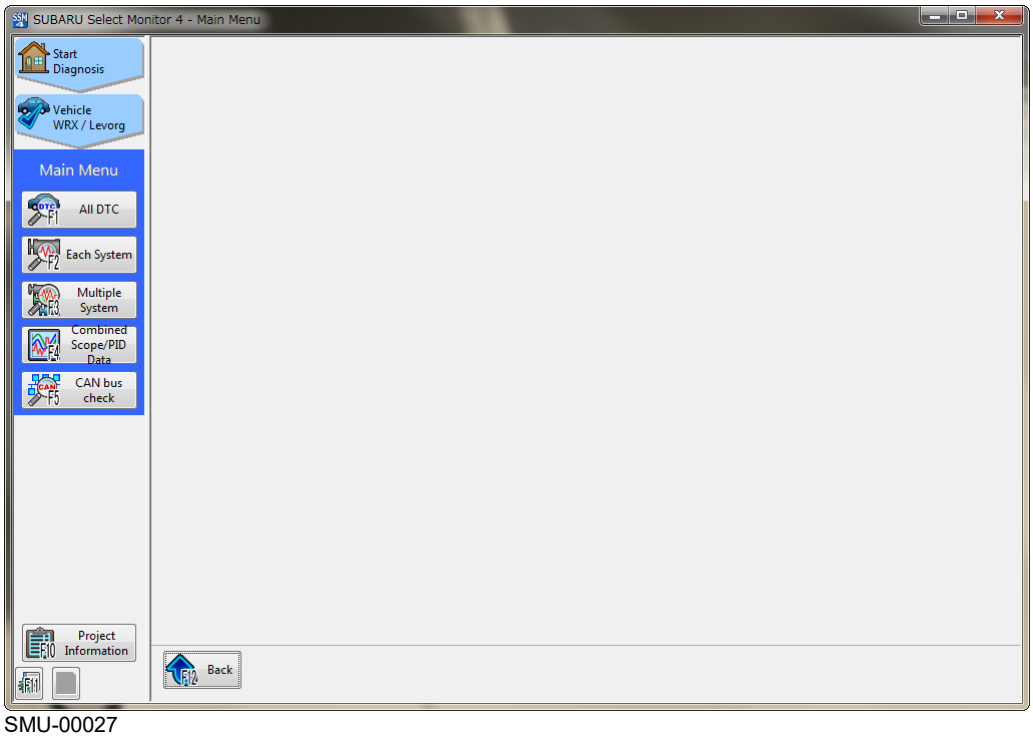
Resume diagnostics confirmation screen



SMU-00026

- Click <1> “OK” on the resume diagnostics confirmation screen to resume diagnostics and display the main menu screen.

Main menu screen



SMU-00027

Notes

- Operation when resuming diagnostics is the same as operation after diagnostics have started.

4-2-4. Managing individual data files

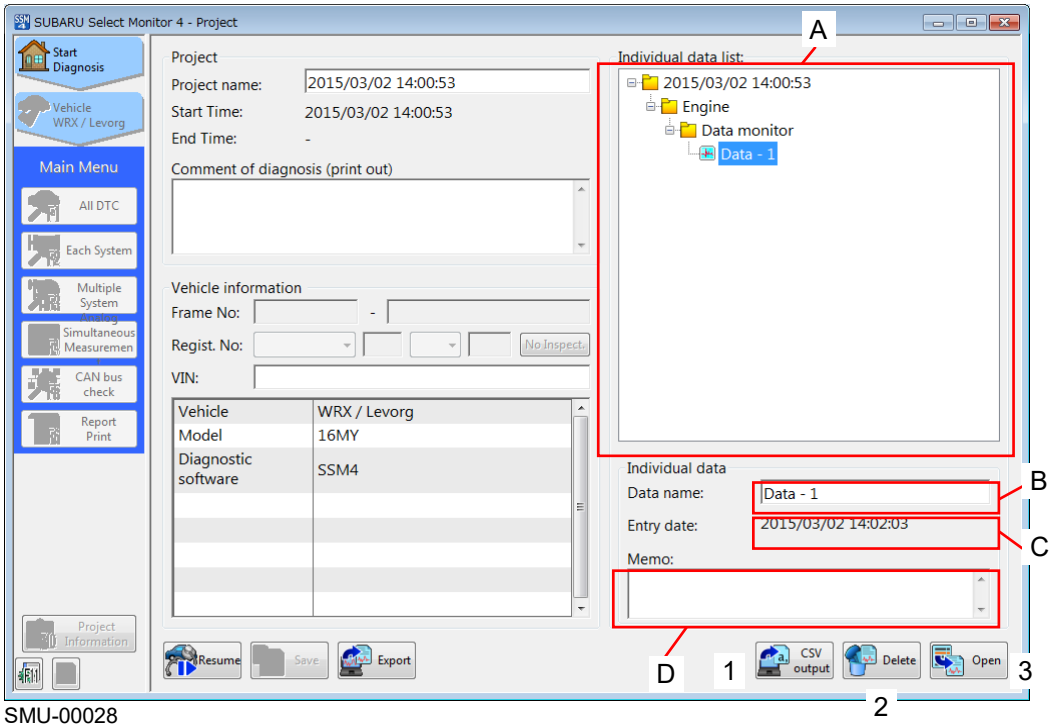
Data files include data saved by the various diagnostics functions (ALL diagnosis code, DTC, data monitor, active test or the like).

This enables you to change names of individual data files and delete data files.

This also enables you to add notes to individual data files and change details.

- This is where individual data files are selected from in the Individual data list on the project screen.

Project screen

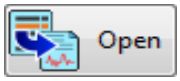


SMU-00028

Screen layout

A	Individual data list	This is a list of various diagnostics results stored in the project.
B	Data name	This is the name of the currently selected individual data file in the area displaying the individual data list. This enables you to change the name of individual data files.
C	Entry date	This is the date and time when the individual data file was recorded.
D	Memo	This field displays optional details such as supplementary information on individual data files. We recommend that you enter easily understood information.

Operating instructions

1		This converts selected individual data into CSV format.
2		This deletes selected individual data.
3		This loads selected individual data.

Load individual data files

This enables you to load individual data files stored in projects.

- After selecting a data file on the project screen, double-click the file or click <3> “Open” to display the load data screen.

Notes

- Refer to the description of each function for more information on loading individual data.

Outputting individual data files in CSV format

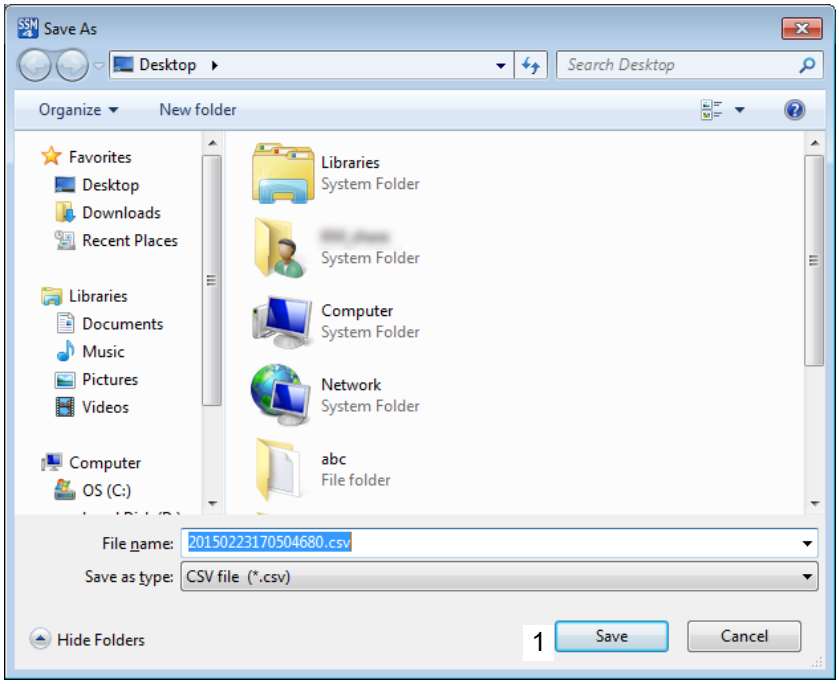
This enables you to output individual data files stored in Projects as CSV files.

- After selecting a data file on the project screen, click <1> “CSV Output” to display the data save screen.

Notes

- The individual data files that can be converted to CSV format are Data Monitor, Active Test, or files that includes Data Monitor results such as freeze frame data included in the diagnostic code.
- <1> "CSV Output" cannot be clicked if no data is selected for CSV conversion.

Data save screen



SMU-00029

- After selecting the desired save location, click <1> “Save” on the data save screen to save the save measurement data as a CSV file and close the screen.

Notes

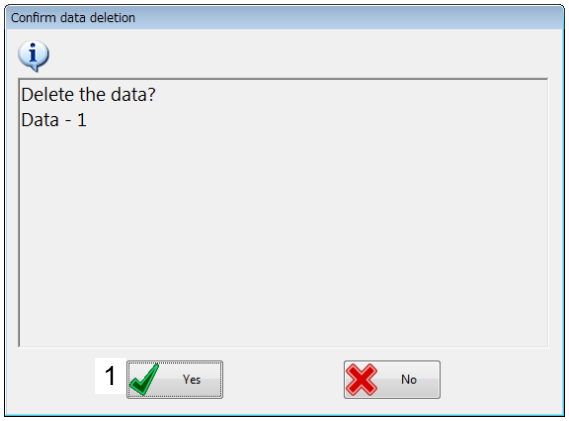
- For diagnostic codes that include more than one freeze frame data, each freeze frame data is stored as its own CSV file. Also, a number representing the acquisition order of the freeze frame data, such as “_1”, is automatically added at the end of the file name.

Deleting individual data files

This enables you to delete individual data files stored in projects.

- After selecting a data file on the project screen, right-click and select “Delete data” or click <2> “Delete” to display the delete confirmation screen.

Delete confirmation screen



SMU-00030

- Click <1> “Yes” on the delete confirmation screen to delete the individual data file.

Important

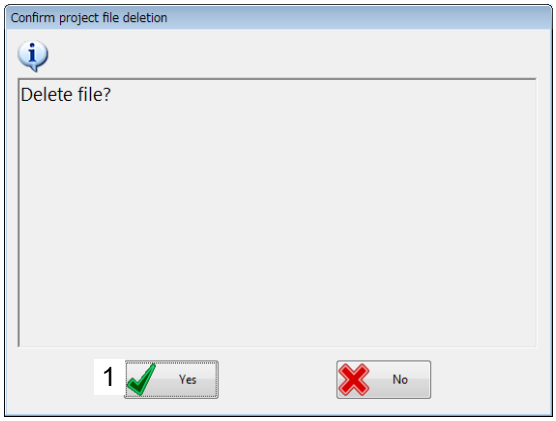
- Before deleting individual data files, make sure that the deletion of the file will not cause any problems. Deleted projects cannot be restored.

4-3. Deleting projects

This enables you to delete projects no longer needed.

- After selecting a project on the select data screen, click <1> “Delete” to display the delete confirmation screen.

Delete confirmation screen



SMU-00019

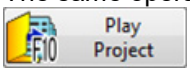
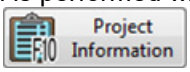
- Click <1> “Yes” on the delete confirmation screen to delete the project.

Important

- Before deleting projects, make sure that the deletion of the project will not cause any problems. Deleted projects cannot be restored.

5. Options

The following table describes the operations that can be performed from the option button.

File	Save	This saves data displayed by the diagnostics functions. Click on the lower-left of the function screen to save. Refer to “5-1. Save” for more information.
	Converting sampling data to CSV files	This enables you to output data measured by the active monitor and active test as CSV files. Refer to “5-2. Converting sampling data to CSV files” for more information.
	Saving the screen data	The screen that is now displayed can be stored as BMP file or PNG file. Refer to “5-3. Saving the screen data” for more information.
	Exit	This exits diagnosis and closes the SSM4 screen. Refer to “5-4. Exiting SSM4” for more information.
Function	Data comparison	This enables you to compare data measured by the active monitor and active test. Refer to “5-5. Data comparison” for more information.
	Import *	This enables you to import exported project data. Refer to “5-6. Import” for more information.
Settings	Language setting *	This enables you to change the display language of SSM4. Refer to “5-7-1. Language setting” for more information.
	Unit setting *	This enables you to change the unit for each item. This enables you to change “SI units” and “US standard units” in batches. Refer to “5-7-2. Unit setting” for more information.
	I/F settings *	This enables you to change the interface box used. Refer to “5-7-3. Interface configuration” for more information.
	VIN acquisition method setting *	This enables you to turn on and off the function to automatically select the vehicle from the retrieved VIN information. Refer to “5-7-4. VIN acquisition method setting” for more information.
	Region setting *	This enables you to change the region setting. Refer to “5-7-5. Region setting” for more information.
	SDAP new installation *	This enables you to install SD applications for the DST-i. Refer to “5-7-6. SDAP new installation” for more information.
Play Project ⇔ Project Information		• Before starting diagnostics (Play Project) This enables you to manage and check project data from previous diagnostics. • During diagnostics (Project Information) This enables you to check vehicle information during diagnostics and data saved by diagnostics functions. The same operation is performed whether you click  or  at the lower-left of the screen. Refer to “4. Project” for more information.
Help	License authentication *	This enables you to perform license authentication. Refer to “5-8-1. License authentication” for more information.
	Version information	This enables you to check the SSM4 version information. Refer to “5-8-2. Version information” for more information.
	Help	This enables you to check the help. Refer to “5-8-3.Help” for more information.

Notes

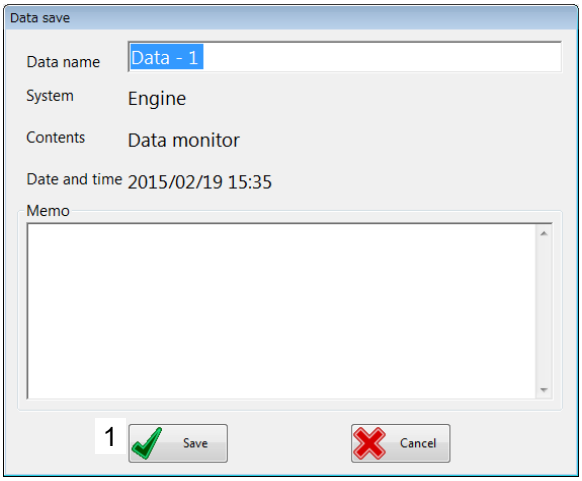
- Items denoted with an asterisk “ * “ can be selected from the start menu screen. These options are grayed out and cannot be selected on other screens.

5-1. Save

This saves data displayed by the diagnostics functions.

- From the , click “File” and then “Save” to display the data save screen.

Data save screen



SMU-00031

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

Notes

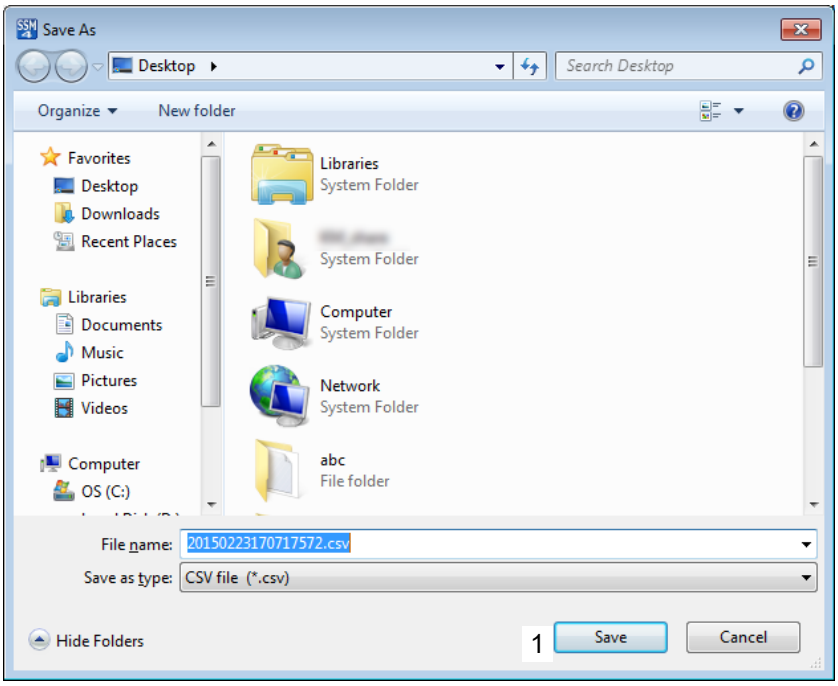
- “Saved name” is grayed out or cannot be selected when data is overwritten (when “Save” is clicked while saved data is played).

5-2. Converting sampling data to CSV files

This enables you to output data measured by the active monitor and active test as CSV files.

- From the , click “File” and then “Converting sampling data to CSV files” to display the data save screen.

Data save screen



SMU-00032

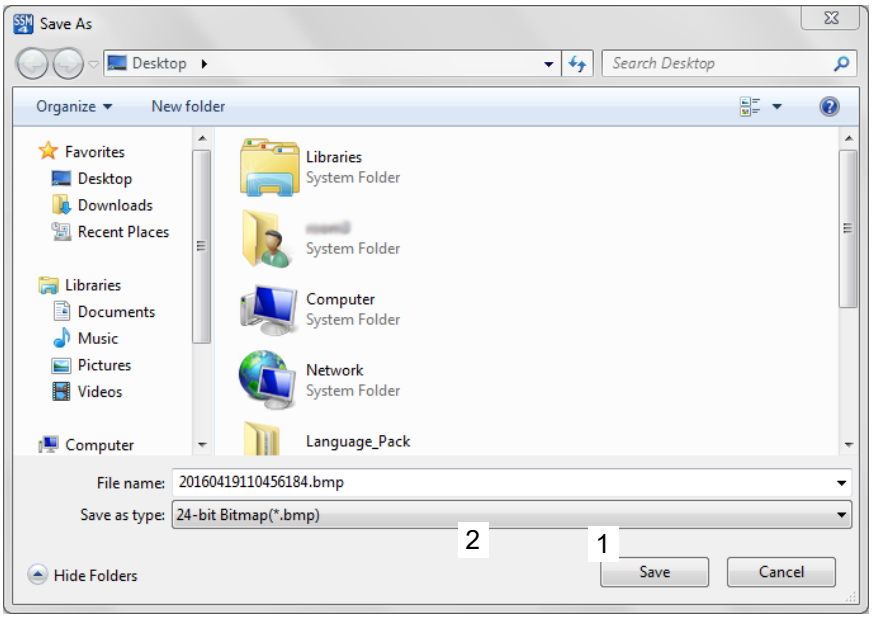
- After selecting the desired save location, click <1> "Save" on the data save screen to save the save measurement data as a CSV file and close the screen.

5-3. Saving the screen data

The screen that is now displayed can be stored as BMP file or PNG file.

- From the , click “File” and then “Saving the screen data” to display data save screen.

Data save screen



SMU-10032

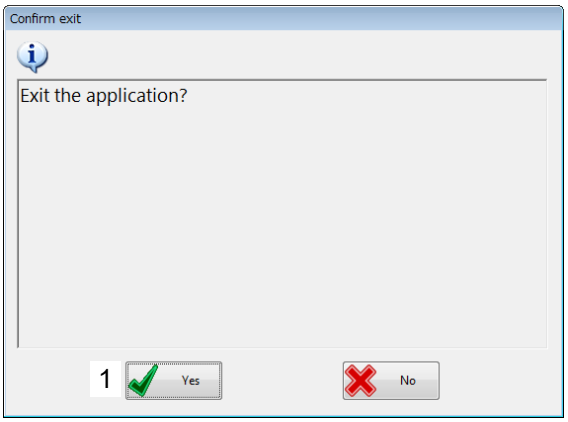
- After selecting a desired save location, click <1> “Save” on the data save screen to save the screen data converted to the selected file format and close the screen.
- You can select the file format of the screen data to be saved from BMP or PNG format by clicking <2> “Save as type” on the data save screen.

5-4. Exiting SSM4

This exits diagnosis and closes the SSM4 screen.

- From the , click “File” and then “Exit” to display the exit confirmation screen.

Exit confirmation screen



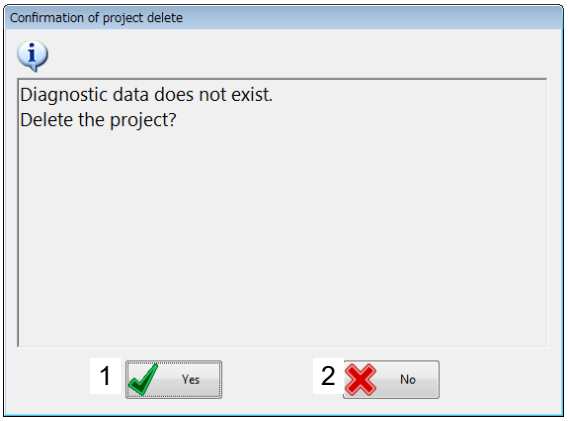
SMU-00033

- Click <1> “Yes” on the exit confirmation screen to exit diagnosis and close the SSM4 screen.

Notes

- If individual data created during diagnostics has not been saved to a project, the delete confirmation screen displays.
  Click <2> “No” to save the data if the project needs to be saved.
  Click <1> “Yes” to delete the data if the project is not needed.

Delete confirmation screen



SMU-00034

5-5. Data comparison

This enables you to compare data measured by the active monitor and active test.

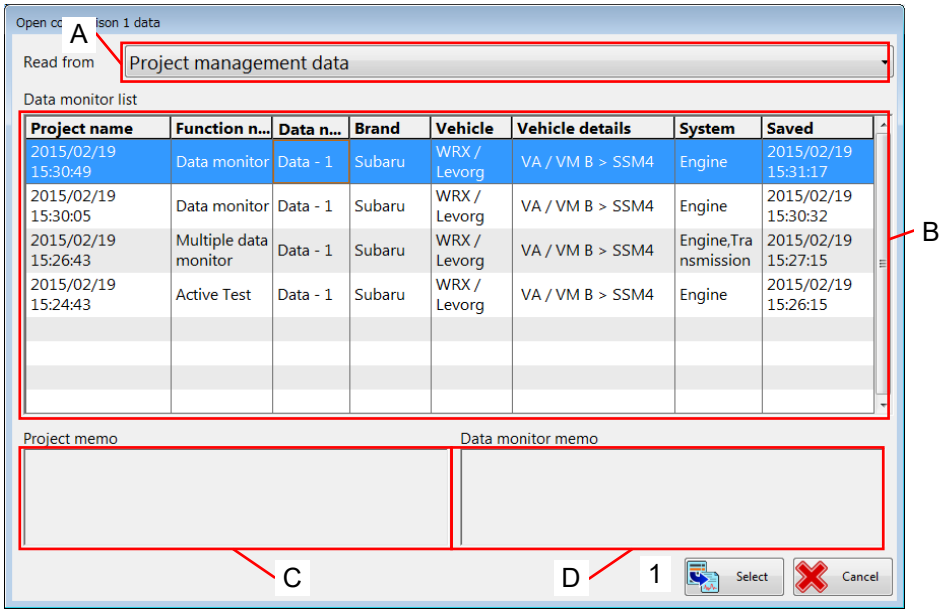
Screens on which data can be compared

<table>
<tr><td rowspan="2">Play project/Project information</td><td>Individual data has not been loaded</td><td>This enables you to select and compare any two types of individual data.
Refer to “5-5-1. Data comparison from the project screen” for more information.</td></tr>
<tr><td>Individual data has been loaded</td><td rowspan="5">This enables you to select the individual data from the project to compare and compare this with the displayed data.
Refer to “11-12. Data comparison” for more information.</td></tr>
<tr><td rowspan="2">Data monitor</td><td>Not measuring</td></tr>
<tr><td>Data has been loaded</td></tr>
<tr><td rowspan="2">Active test</td><td>Not measuring</td></tr>
<tr><td>Data has been loaded</td></tr>
</table>

5-5-1. Data comparison from the project screen

- Click “Data comparison” from the on the play project screen or project information screen to display the select first type of data for comparison screen.

Select first type of data for comparison screen



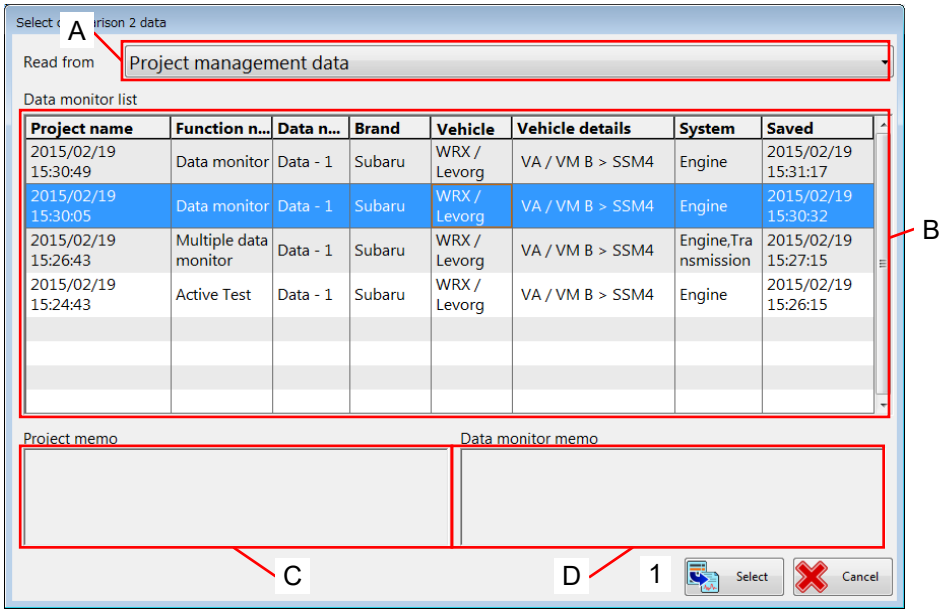
SMU-00035

Screen layout

A	Read from	This is a pull-down menu for selecting the project to load.
B	Data monitor list	This displays a list of projects stored in the particular folder and that contain comparable individual data (measured data from the data monitor). All individual data in the project are displayed when there are multiple individual data files that can be compared in the same project name.
C	Project memo	This field displays entered notes such as supplementary information on projects. Nothing is displayed if no memo have been entered.
D	Data monitor memo	This field displays entered notes such as supplementary information on individual data. Nothing is displayed if no memo have been entered.

- After selecting individual data from the <B> data monitor list, click <1> “Select” to display the select second type of data for comparison screen.

Select second type of data for comparison screen



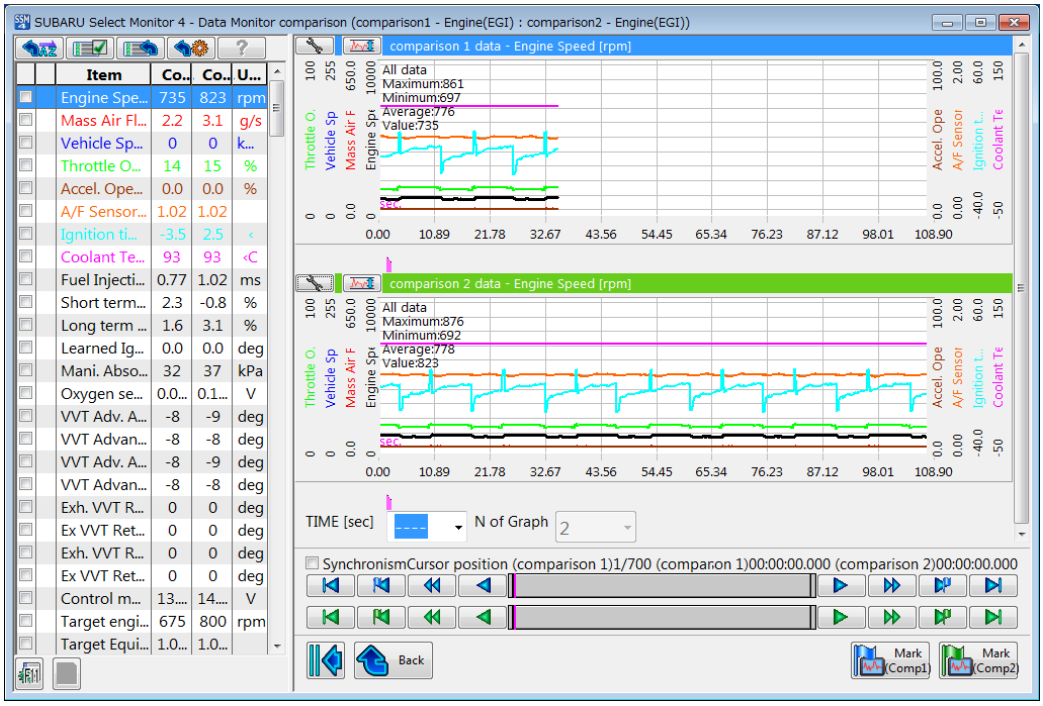
SMU-00036

Screen layout

A	Read from	This is a pull-down menu for selecting the project to load.
B	Data monitor list	This displays a list of projects stored in the particular folder and that contain comparable individual data (measured data from the data monitor). All individual data in the project are displayed when there are multiple individual data files that can be compared in the same project name.
C	Project memo	This field displays entered notes such as supplementary information on projects. Nothing is displayed if no memo have been entered.
D	Data monitor memo	This field displays entered notes such as supplementary information on individual data. Nothing is displayed if no memo have been entered.

- After selecting individual data from the <B> data monitor list, click <1> “Select” to display the data comparison screen.

Data comparison screen



SMU-00037

Notes

- Refer to “16-12. Data comparison” for more information.

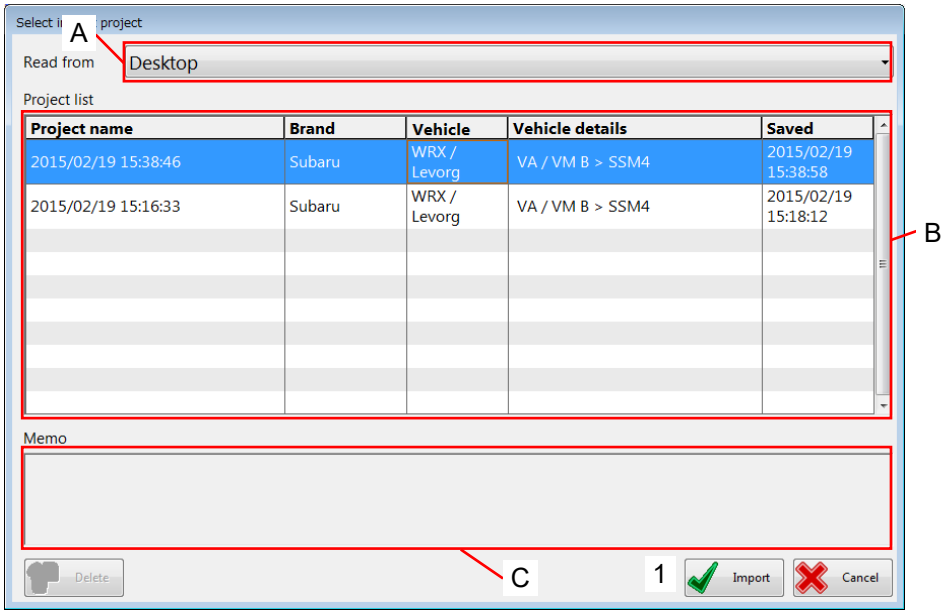
5-6. Import

This enables you to import exported project data.

5-6-1. Importing project data

- From the on the start menu screen, click “Function,” “Import” and then “Project file” to display the select data screen.

Select data screen



SMU-00038

Screen layout

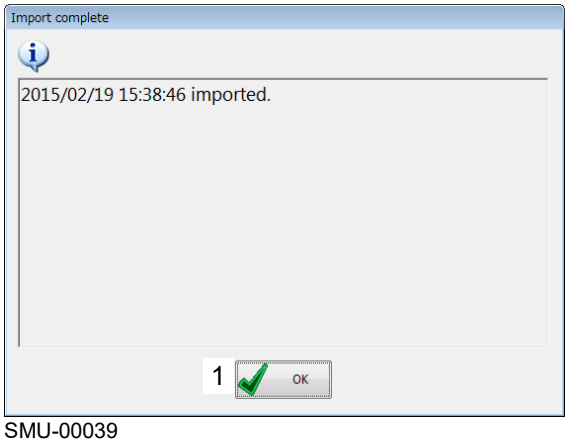
A	Read from	This is a pull-down menu for selecting the project to load.
B	Project list	This displays the project data stored in the folder from which project data is loaded.
C	Memo	This field displays entered notes such as supplementary information for project data. Nothing is displayed if no memo have been entered.

- After selecting a project from the <B> project list, click <1> “Import” to display the completion screen.

Notes

- You cannot click <1> “Import” until a project is selected.

Completion screen

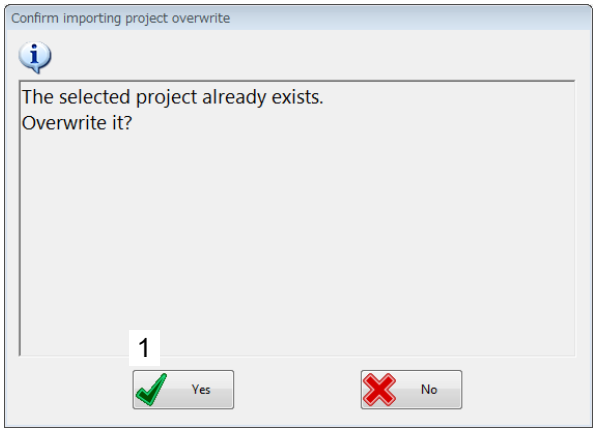


SMU-00039

- Click <1> “OK” on the completion screen to close the screen.

- When an exported file is imported, if there is the same project as the file to be imported in the application, “Import / Overwrite confirmation dialog box” will appear.

Import / Overwrite confirmation dialog box



SMU-10027

- Click <1> “Yes” on the Import / Overwrite confirmation dialog box to save the date in the project file and close the screen.

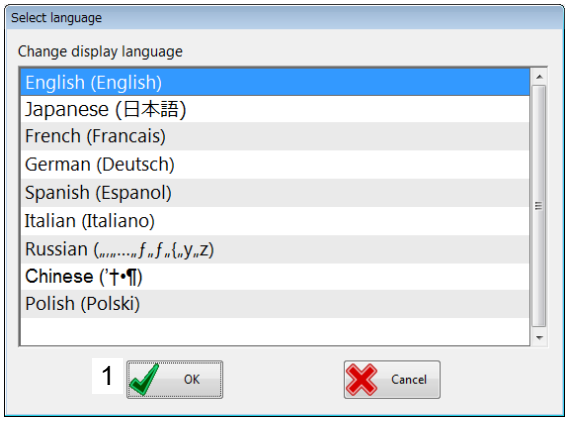
5-7. Settings

5-7-1. Language setting

This enables you to change the display language of SSM4.

- From the on the start menu screen, click “Settings” and then “Language setting” to display the settings screen.

Settings screen



SMU-00040

- Select the display language and then click <1> “OK” to change the display language and close the screen.

Notes

- The display language changes when the region setting is changed.
  Refer to “5-7-5. Region setting” for more information.

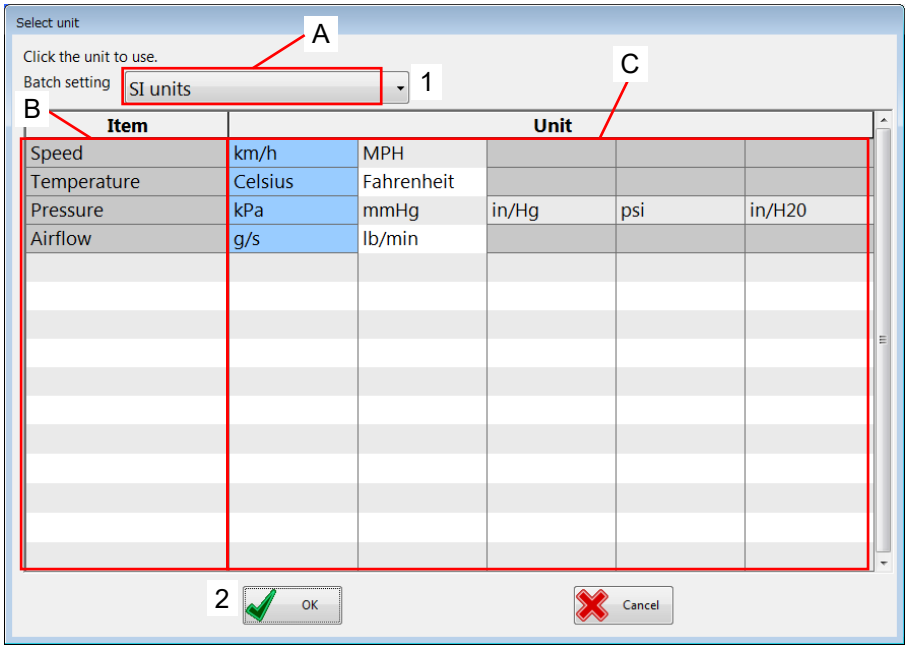
5-7-2. Unit setting

This enables you to change the unit displayed for each item.

This enables you to change “SI units” and “US standard units” in batches.

- From the on the start menu screen, click “Setting” and then “Unit setting” to display the settings screen.

Settings screen

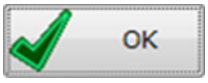


SMU-00041

Screen layout

A	Batch setting	This displays the set of units currently selected.
B	Item	This displays the items for which units can be changed manually.
C	Unit	This displays the units configurable for each item. Currently configured units are displayed in blue and the selectable units are displayed in yellow.

Operating instructions

1		Selecting the set of units from “Batch settings” enables you to select a batch of units previously configured into a set of units. As soon as one unit is changed, the “Custom user” is automatically selected.
2		This changes to the selected unit and close the screen.

Notes

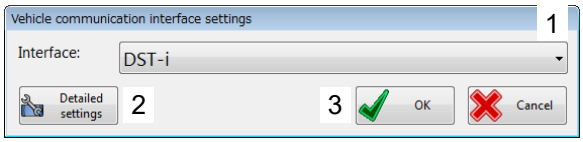
- The “Distance” unit cannot be changed directly on the settings screen.
  Changing the unit for “Speed” also synchronizes the unit for distance (km or miles).
- Click a setting value to highlight this value in yellow.
  Click the same area again to return the setting to the value before being edited.

5-7-3. Interface configuration

This enables you to change the interface box used.

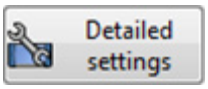
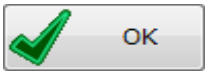
- From the on the start menu screen, click “Setting” and then “I/F settings” to display the settings screen.

Settings screen



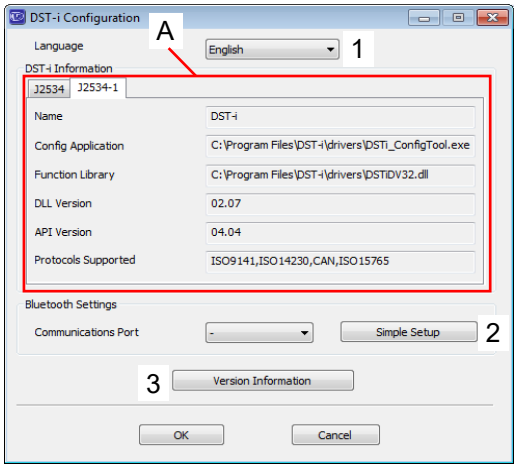
SMU-00042

Operating instructions

1		This selects the interface box used. Interface boxes that do not support J2534 Pass-Thru programming, SDI (SUBARU Diagnostic Interface), or HDI (HITACHI Diagnostic Interface) are not indicated in the drop-down selection box for interface.
2		This displays the detailed settings screen for the selected interface box. Detailed settings are not available for some interface boxes.
3		This changes to the selected interface box and close the screen.

- Click <2> “Detailed settings” on the settings screen to display the detailed settings screen.

Detailed settings screen



SMU-00043

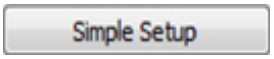
Notes

- This section describes the DST-i detailed settings screen.

Screen layout

A	DST-i Information	This displays various DST-i information.

Operating instructions

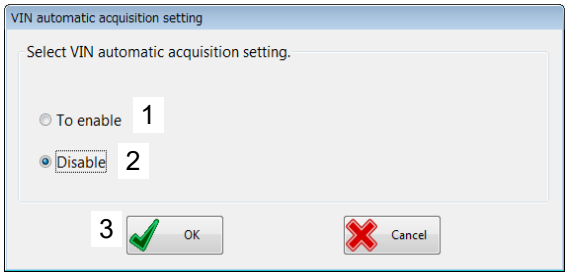
1		This enables you to change the display language for the detailed settings screen.
2		This enables you to automatically search for communication ports (COM ports) capable of bluetooth communication.
3		This enables you to check the DST-i software version.

5-7-4. VIN acquisition method setting

This enables you to turn on and off the function to automatically select the vehicle information from the retrieved VIN information.

- From the on the start menu screen, click “Setting” and then “VIN acquisition method setting” to display the settings screen.

Settings screen



SMU-00044

- After selecting either <1> “To enable” or <2> “Disable”, click <3> “OK” to turn the function on or off and close the screen.

5-7-5. Region setting

This enables you to change the region setting.

Caution

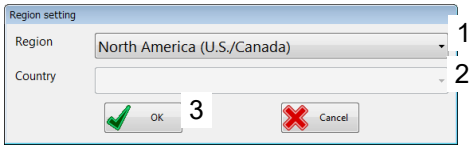
- Vehicle models differ by region and country, therefore set the region where the vehicle was sold. If wrongly set, you may be unable to select the vehicle when wanting to diagnose trouble.

Notes

- The region may not be change depending on the destination of the software.

- From the on the start menu screen, click “Setting” and then “Region setting” to display the settings screen.

Settings screen



SMU-10018

Operating instructions

1		This selects the region name.
2		This selects the country name. A country name is not required when certain regions have been selected.
3	OK	This changes to the selected region and close the screen.

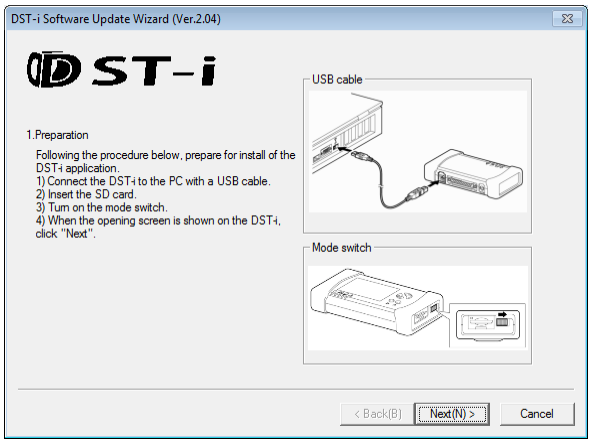
5-7-6. SDAP new installation

This enables you to install SD applications for the DST-i.

- From the on the start menu screen, click “Setting” and then “SDAP new installation” to start the DST-i software version updating tool.

  Follow the screen displays to install the application.

DST-i software version updating tool



SMU-00046

5-8. Help

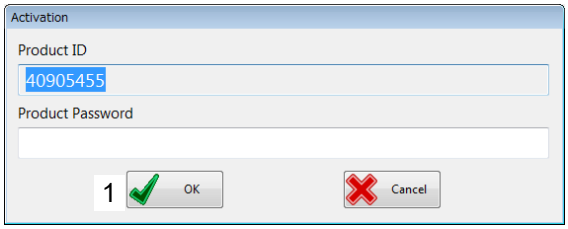
5-8-1. License authentication

This enables you to perform license authentication.

- From the on the start menu screen, click “Help” and then “License authentication” to display the license authentication screen.

Notes
- This function may not be usable depending on the destination of the software.

License authentication screen



SMU-00047

- After entering password to "product PW", click <1> "OK" to perform license authentication and close the screen.

Notes
- The authentication have completed and the license authentication screen is not displayed when SSM4 starting.

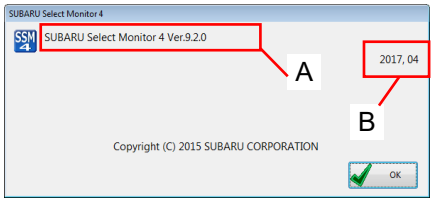
5-8-2. Version information

This enables you to check the SSM4 version information.

You may need the version information when making inquiries about the software.

- From the , click “Help” and then “Version information” to display the version information screen.

Version information screen



SMU-10019

Screen layout

A	Version information	This displays the version information for the installed SSM4.
B	Release date	This displays the release date for the installed SSM4.

5-8-3. Help

This enables you to help.

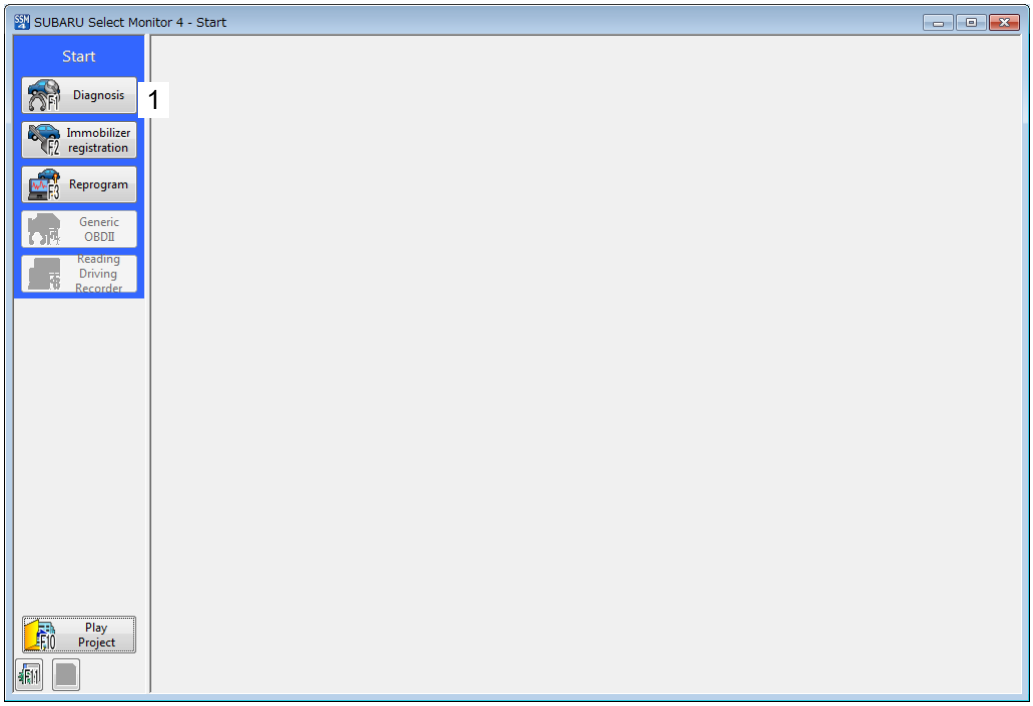
- From the , click “Help” and then “Help” to display the help screen.

6. Diagnosis

Select the vehicle information on which to perform fault diagnostics to start diagnostics.

6-1. Vehicle selection

Start menu screen



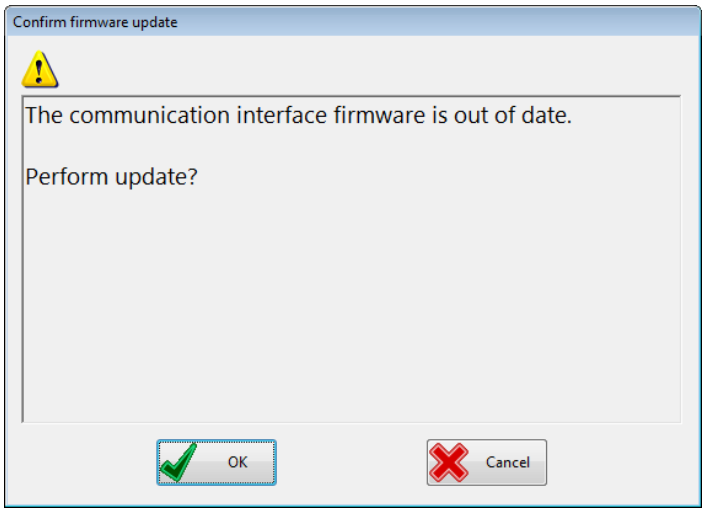
SMU-00049

- Click <1> “Diagnosis” on the start menu screen to display the vehicle selection screen.

Notes

- When the DST-i firmware (interface software) is not the latest version, the Confirm firmware update screen appears. Clicking “OK” starts the “DST-i Software Update Wizard”. Install the software as instructed by the on-screen indications.

Confirm firmware update screen

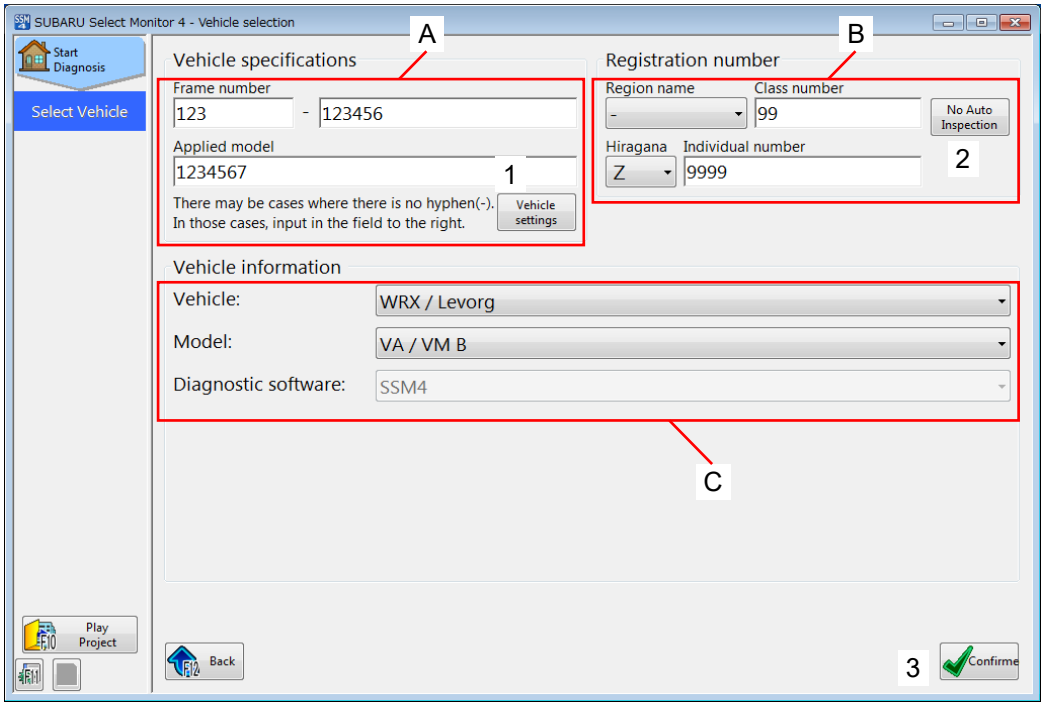


SMU-10057

Notes
- The content of the vehicle selection screen differs depending on the region selected in the region settings.

■ When “Japan” is selected in the region settings

Vehicle selection screen



SMU-00050

Screen layout

A	Vehicle specifications	Enter the vehicle number and applied model of the vehicle you want to diagnose.
B	Registration number	Enter the registration number of the vehicle you want to diagnose.
C	Vehicle information	Select the name of vehicle and model for the vehicle you want to diagnose.

Operating instructions

1	Vehicle settings	Automatically selected on the basis of the loaded vehicle information from the entered vehicle number and applied model. Nothing is displayed if data cannot be loaded.
2	No Auto Inspection	Template information is entered for the registration number. Use this when you do not know the registration number for the vehicle you want to diagnose.

- Enter the vehicle number, applied model, and registration number for the vehicle you want to diagnose into <A> “Vehicle specifications” and <B> “Registration number” on the vehicle selection screen.

Notes
- Diagnostics can be performed without entering the <A> “Vehicle specifications” and <B> “Registration number”.
  This can be entered on the project screen during or after diagnostics.

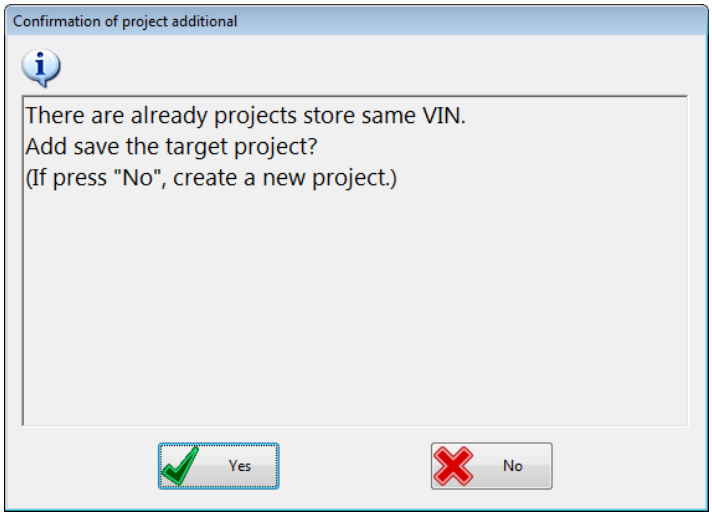
- Select the name of vehicle and model for the vehicle you want to diagnose from <C> “Vehicle information”.

Notes
- The model cannot be selected until the name of the vehicle is selected.
  The model selection is cleared if the name of vehicle selection is changed afterwards.
- When there is only one item to choose from, this is automatically selected.

- After selecting all vehicle information, click <3> “Confirmed” to display the main menu screen.

Notes
- <3> “Confirmed” cannot be clicked until all vehicle information has been selected.
- If “SSMIII” is selected as diagnosis software, click “Confirmed” to start “SUBARU Select Monitor III.”
- If “SSM-K” is selected as diagnosis software, click “Confirmed” to start “SSM-K.”
- If the input VIN is the same as the vehicle information of the project that was saved before, the Add-to-Project Confirmation screen is displayed.
  Click “Yes” on the additional save confirmation screen to display the select data screen and append the information to the selected project.
  Click “No” to save the information as a new project.

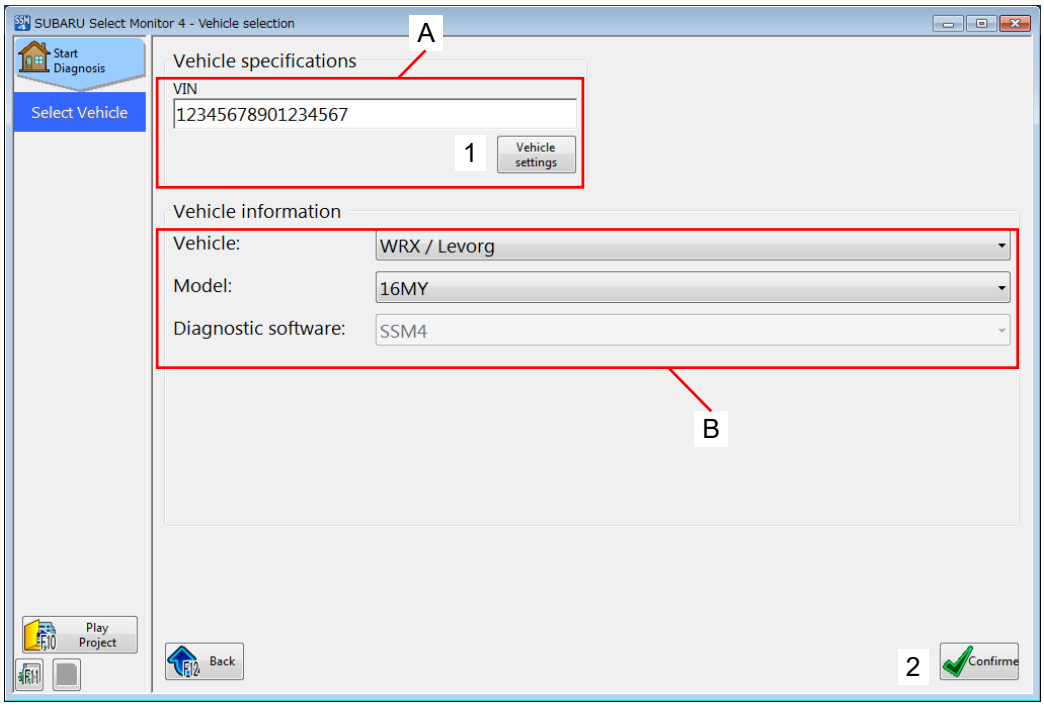
Add-to-Project Confirmation screen



SMU-10066

■ When “Japan” is not selected in the region settings

Vehicle selection screen



SMU-00051

Screen layout

A	Vehicle specifications	Enter the VIN of the vehicle you want to diagnose. The VIN is automatically entered if the VIN automatic acquisition setting is enabled. Refer to “5-7-4. VIN acquisition method setting” for more information.
B	Vehicle information	Select the name of vehicle and model for the vehicle you want to diagnose.

1	Vehicle settings	Automatically selected on the basis of the loaded vehicle information from the entered VIN. If vehicle information cannot be read out when the button is pressed down, the error dialog box will appear.

- Enter the VIN of the vehicle you want to diagnose in <A> vehicle specifications on the vehicle selection screen.

Notes
- Diagnostics can be performed without entering the <A> vehicle specifications.
  This can be entered on the project screen during or after diagnostics.

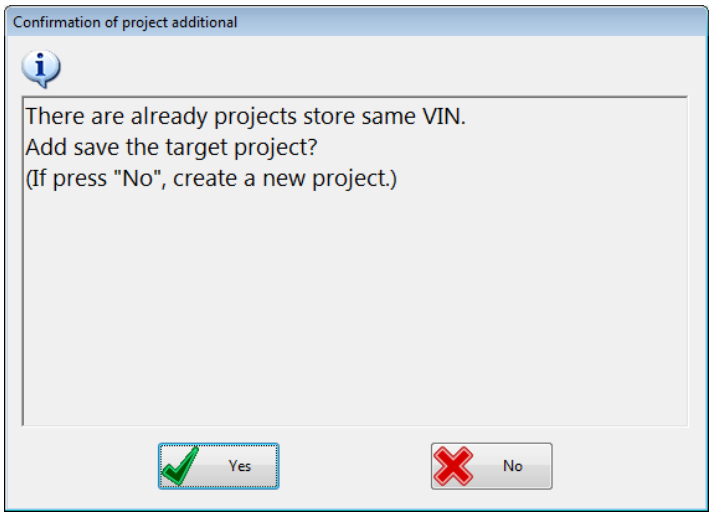
- Select the name of vehicle and model for the vehicle you want to diagnose from the <B> vehicle information.

Notes
- The model cannot be selected until the name of the vehicle is selected.
  The model selection is cleared if the name of vehicle selection is changed afterwards.
- When there is only one item to choose from, this is automatically selected.

- After selecting all vehicle information, click <2> “Confirmed” to display the main menu screen.

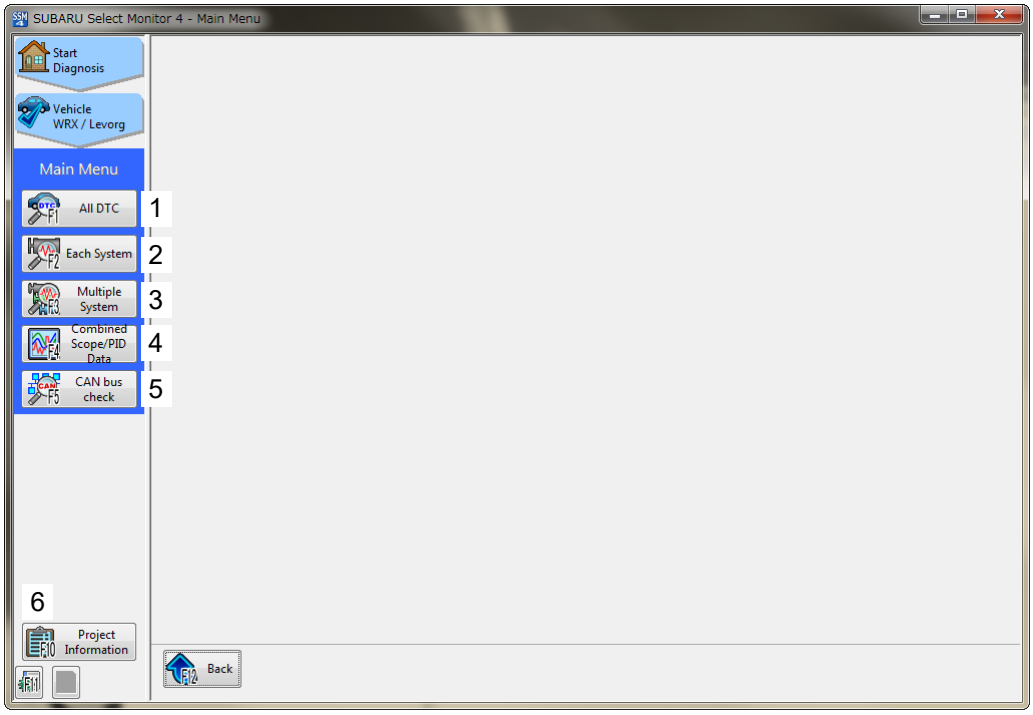
Notes
- <2> “Confirmed” cannot be clicked until all vehicle information has been selected.
- If “SSMIII” is selected as diagnosis software, click “Confirmed” to start “SUBARU Select Monitor III.”
- If the input VIN is the same as the vehicle information of the project that was saved before, the Add-to-Project Confirmation screen is displayed.
  Click “Yes” on the additional save confirmation screen to display the select data screen and append the information to the selected project.
  Click “No” to save the information as a new project.

Add-to-Project Confirmation screen



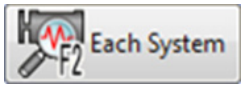
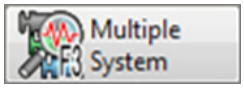
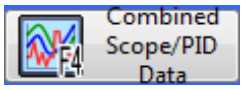
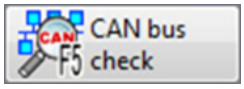
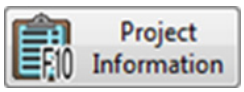
SMU-10066

Main menu screen



SMU-00052

Operating instructions

1		{All DTC Inspection} This displays the fault detection state of the control module in all control systems and the DTCs representing the details of the fault. Refer to “7. All DTC inspection” for more information.
2		{Individual System Inspection} This enables you to select individual systems from control systems compatible with SSM4 and display input and output data into/from control modules and information such as the stored DTCs. This also enables you to delete DTCs stored in the control module, perform inspections while manually driving the actuator, and configure control module settings. Refer to “8. Individual system inspection” for more information.
3		{Multiple System Inspection} This enables you to measure both control data and input and output data into/from the control module in multiple control system compatible with SSM4 at the same time. Refer to “15. Multiple system inspections” for more information.
4		{Combined Scope/PID Data} This enables you to measure both analog data and output data into/from the control module at the same time when using an oscilloscope probe. Refer to “19. Combined Scope/PID Data” for more information.
5		{CAN bus check} This enables you to check the ECU connected to the CAN bus and also check the communication state of each system. Refer to “21. CAN bus check” for more information.
6		{Review Projects} This enables you to manage and check project data from previous diagnostics. Projects are diagnostics records containing saved data and vehicle information previously diagnosed. Refer to “4. Project” for more information.

7. All DTC inspection

This displays the fault detection state of the control module in all control systems supported by SSM4 and the stored DTCs.

Perform this inspection when you cannot identify which control system is experiencing trouble. Use the displayed DTC to diagnose the fault.

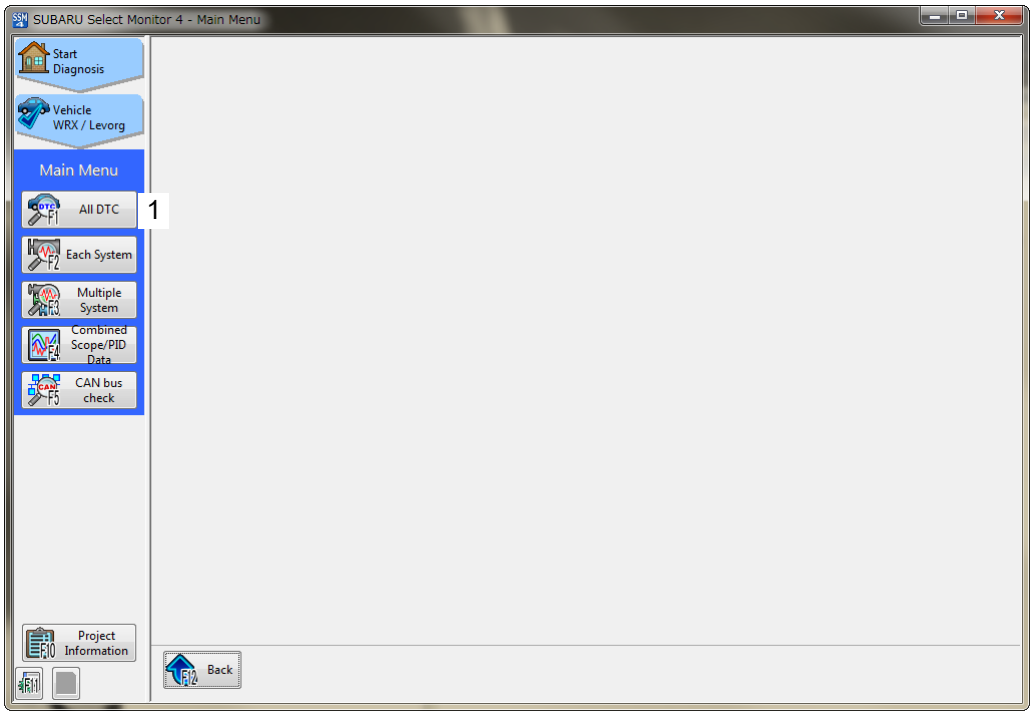
Caution

- If the vehicle has cruise control, turn the cruise control switch on before performing this inspection.
- If the vehicle has automatic lights or automatic windshield wiper, turn the light switch to any position other than AUTO before performing the inspection.

7-1. All DTC display

This displays the fault detection state of the control module in all control systems and the DTCs representing the details of the fault.

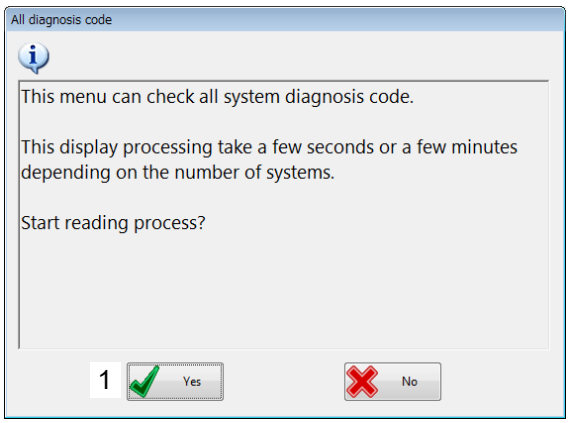
Main menu screen



SMU-00053

- Click <1> “All DTC” on the main menu screen to display the confirm execution screen.

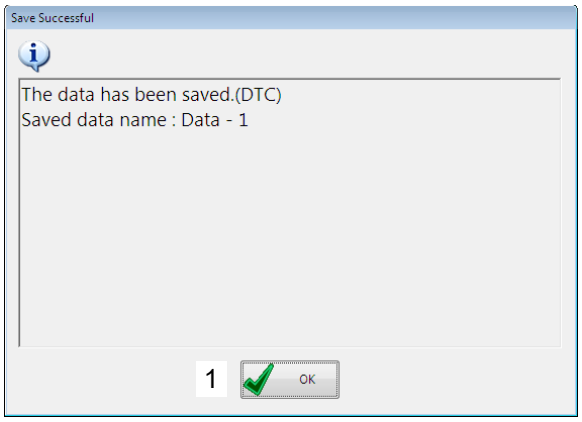
Confirm execution screen



SMU-00054

- Click <1> "Yes" on the confirm execution screen to start reading the DTCs.
- When all DTCs from all systems have been read, the Save Successful screen displays.

Save Successful screen



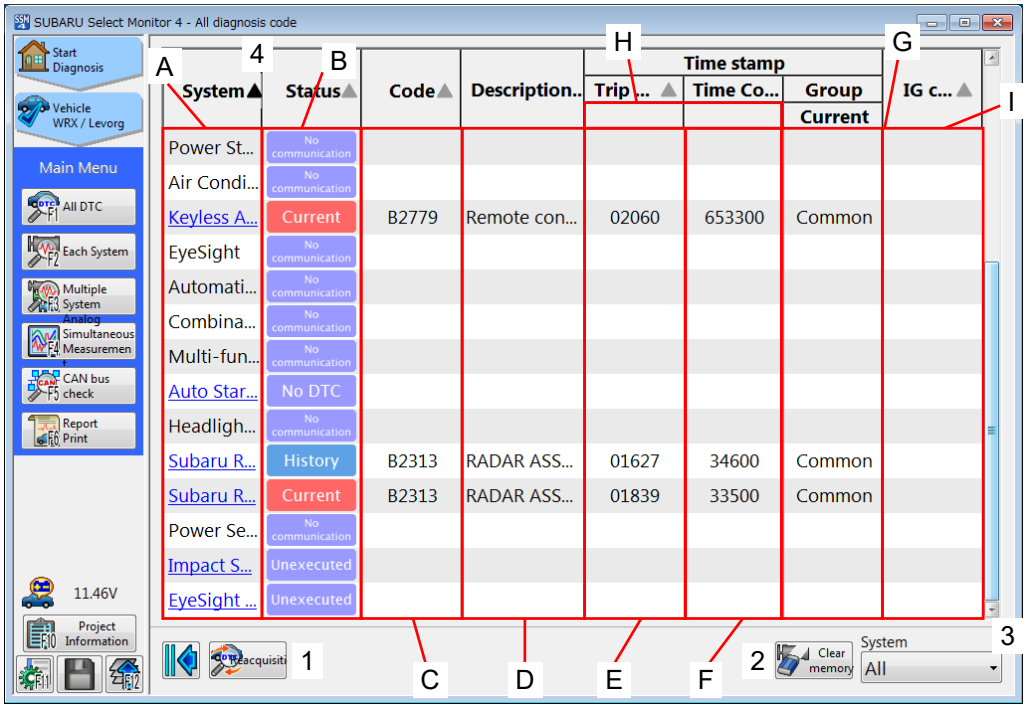
SMU-00211

- Click <1> “OK” on the Save Successful screen to display the All DTC display screen.

Notes

- The results are automatically saved.
- Click “Stop” while the DTCs are being read to stop the read process.
  Once stopped, the DTCs that were read from systems are displayed on the all DTC display screen. A status of “Not performed” is displayed for systems that were not yet read.

All DTC display screen



SMU-10036

Screen layout

A	System	This displays the name of the system. Click the system name display to display DTC display screen for that system or the select function screen. Clickable system names are displayed using blue characters that are underlined.
B	Status	This displays the DTC status. Refer to the following table on status types.
C	Code	This displays the DTC. Systems with detail codes at the end of DTCs are displayed as such. Click the DTC display to start the DTC manual link.
D	Description & trouble part	This displays the name of the DTC.
E	Trip count	This displays the trip count.
F	Elapsed time that ignition is on	It will display the elapsed time after the IG ON. The unit is displayed in milliseconds (ms).
G	Group	This displays either “Shared” or “Independent”. “Shared” is a counter of data retrieved from BIU. “Independent” is an independent counter in the ECU.
H	Current information	This displays the current time for the trip count and the elapsed time after the ignition is on.
I	IG counter	It will display the DTC that is stored in front of the IG ON times.

Notes

- Columns can be widened by dragging the boundary of the header cell in each column.
- Column width can be automatically matched to the longest text string in the column by double-clicking the boundary of the header cell in each column.

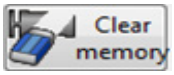
Status types

Current	History	History one before	History two before
History three before	Pending	No DTC	No communication
Unexecuted	No function		

Notes

- In the case of systems that cannot display diagnostics, "No function" is indicated as the status.

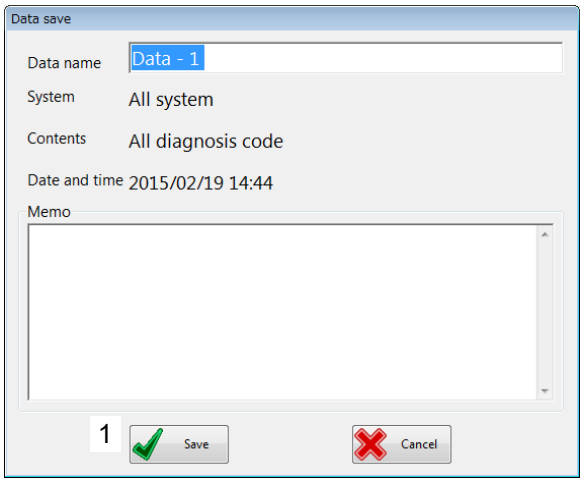
Operating instructions

1		DTCs are reread from systems capable of communication. DTCs are reread from all systems if there was a communication failure the first time attempting to read all DTCs. If communication was successful for even one system the first time attempting to read all DTCs, then DTCs are only read from the systems capable of communication during the initial attempt. DTC of the system which was not able to communicate in the first time does not perform reading. The status is displayed with "not performed"
2		This deletes DTCs from all systems and rereads all DTCs. Refer to “7-4. Clearing memory” for more information.
3		This filters the display of DTCs from selected systems.
4		Display the data in ascending sequence.

7-2. Saving data

- Click the in the menu display area to display the data save screen.

Data save screen



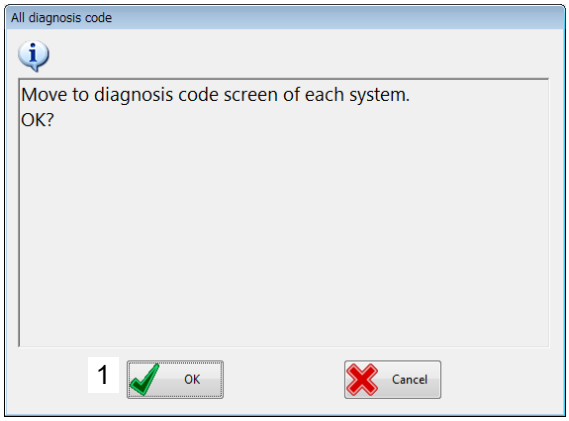
SMU-00056

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

7-3. Individual system display

- Click the system name display area to display the confirm screen transition screen.

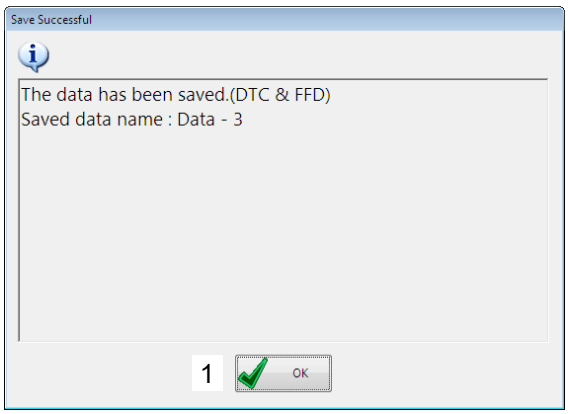
Confirm screen transition screen



SMU-00057

- Click <1> “OK” on the confirm screen transition screen to display the Save Successful screen.

Save Successful screen



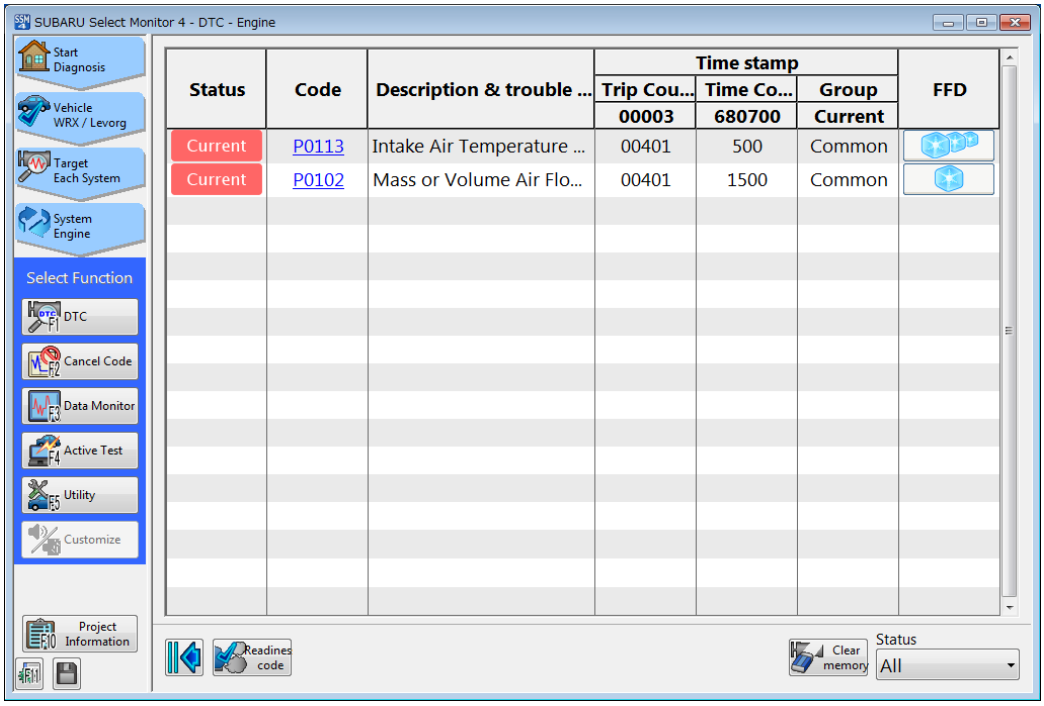
SMU-00217

- Click <1> “OK” on the Save Successful screen to display the DTC display screen for the particular system.

Notes

- The results are automatically saved.
- If the select function screen displays, this means that there is no DTC function in the selected system.

DTC display screen for individual systems



SMU-00058

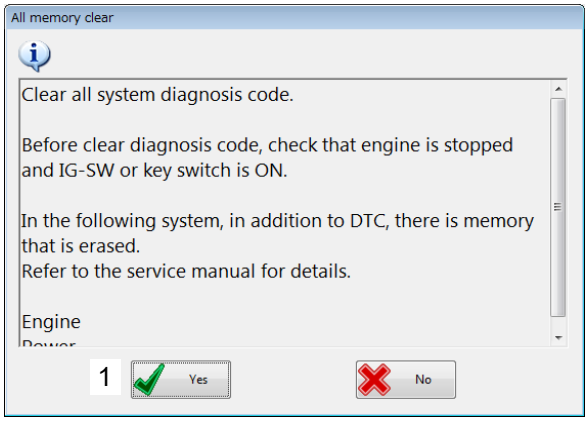
Notes

- Refer to “9-1. DTC display” for more information.

7-4. Clearing memory

- Click <2> “Clear memory” on the all DTC display screen to display the confirm deletion screen.

Confirm deletion screen



SMU-00059

Perform this task in accordance with the messages displayed on the confirm deletion screen.
Click <1> “Yes” to start deleting the DTCs.
Once the DTCs are successfully deleted, the confirm reacquisition screen displays.

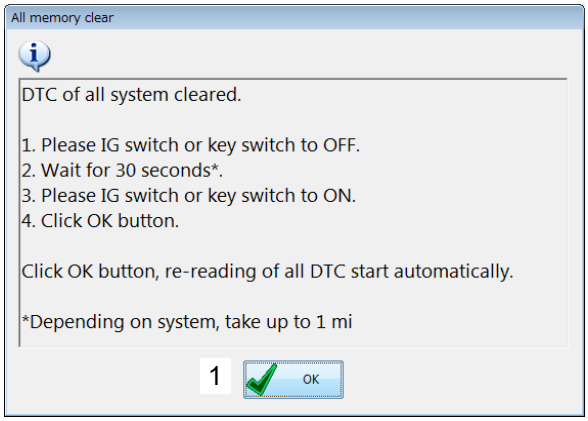
Important

- Before deleting trouble codes, make sure the engine is not running and that the starter switch (ignition switch) is on.
- Before deleting trouble codes, make sure that deleting all trouble codes from all displayed systems will not cause any problems. Deleted codes cannot be restored.

Notes

- Click “Stop” during the delete process to stop this process.
  Codes successfully deleted before stopping the process cannot be restored.

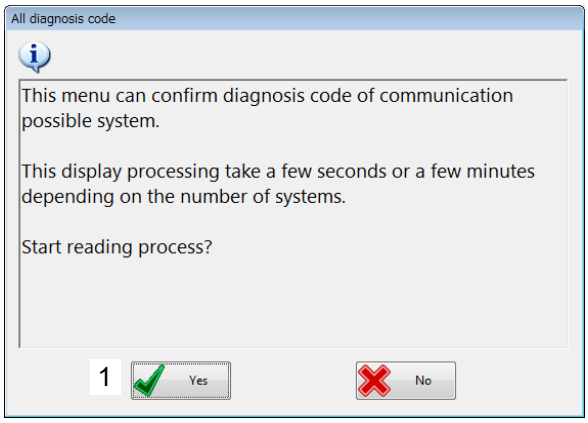
Confirm reacquisition screen



SMU-00060

Perform this task in accordance with the messages displayed on the confirm reacquisition screen.
Click <1> “OK” to display the confirm execution screen.

Confirm execution screen



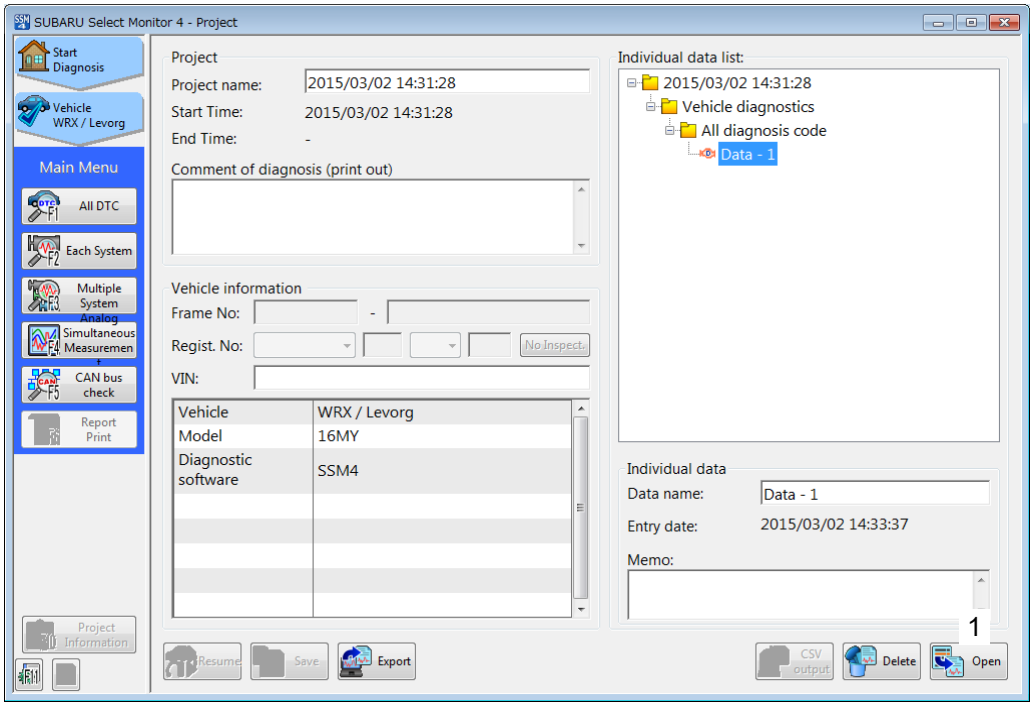
SMU-00061

- Click <1> “Yes” on the confirm execution screen to start rereading the DTCs.

7-5. Loading data

- Click “Project Information” in the menu display area to display the project screen during the diagnosis.

Project screen



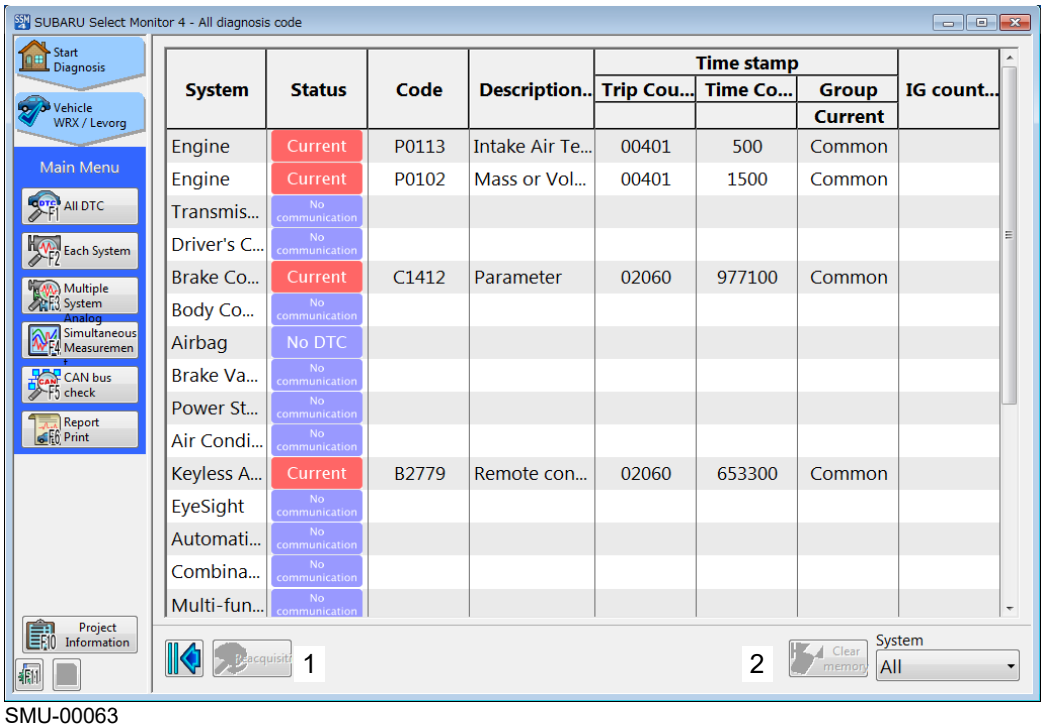
SMU-00062

- Double-click on the desired individual all DTC data file from the individual data file list on the project screen or select the desired data and click <1> “Open” to display the load data screen.

Notes

- For the data automatically saved by checking diagnosis codes or the like, “Auto save” is displayed in the memo field.
- The saved all DTC data is under the “All DTC” in the individual data list.

Load data screen



SMU-00063

Notes

- Refer to “7-1. All DTC display” for more information.
- You cannot click the system name display to display the DTC display screen for that system from the load data screen.
- You cannot click <1> “Reacquisition” and <2> “Clear memory” from the load data screen.

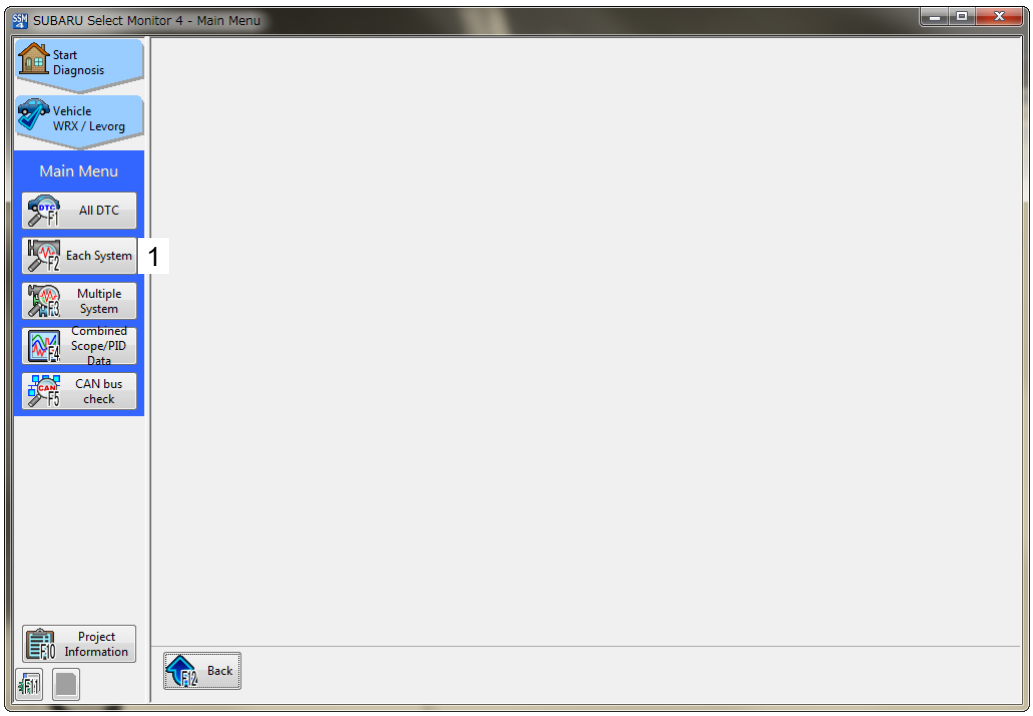
8. Individual system inspection

This enables you to select individual systems from control systems compatible with SSM4 and display input and output data into/from control modules and information such as the stored DTCs.

This also enables you to delete DTCs stored in the control module, perform inspections while manually driving the actuator, and configure control module settings.

8-1. Select system

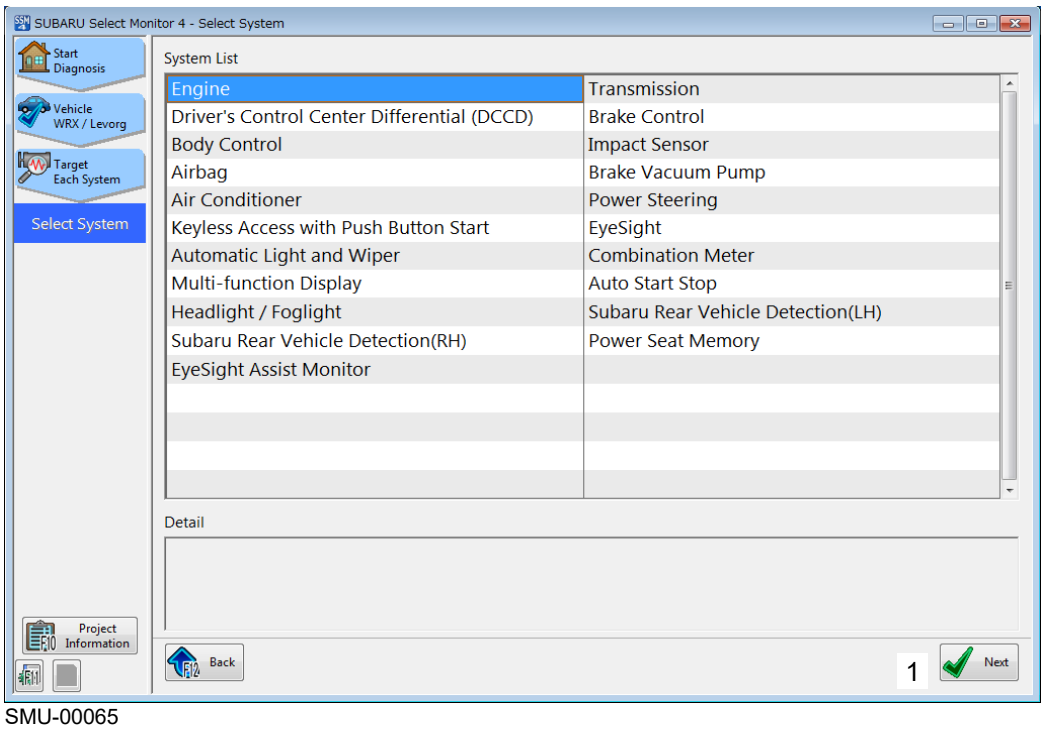
Main menu screen



SMU-00064

- Click <1> “Each System” on the main menu screen to display the select system screen.

Select system screen



SMU-00065

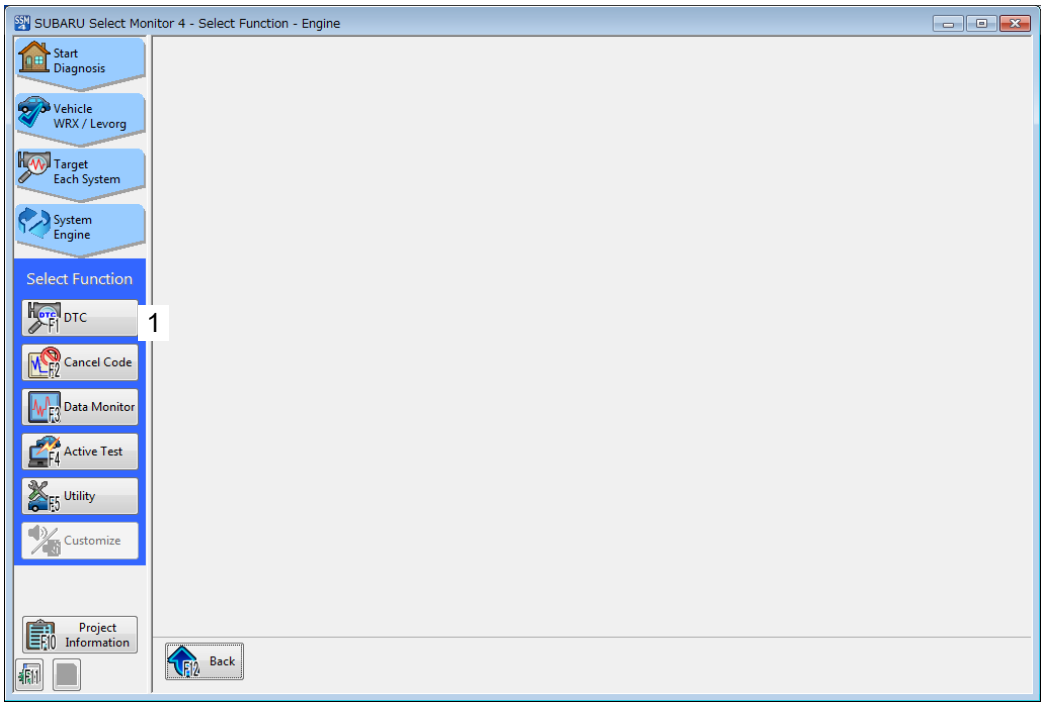
- Double-click the system you want to diagnose from the system list on the select system screen or select the select and click <1> “Next” to display the select function screen.

9. DTC

This enables you to check DTCs stored in control modules.

9-1. DTC display

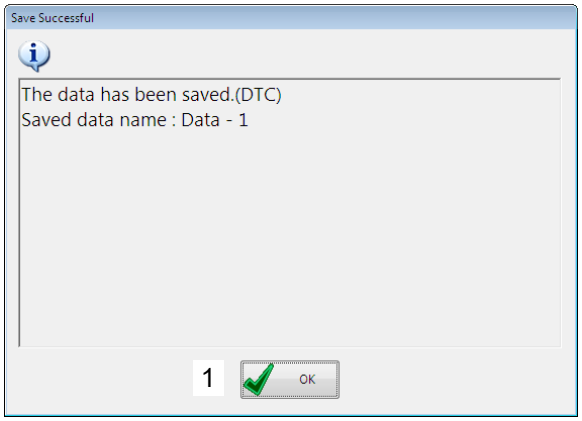
Select function screen



SMU-00066

- Click <1> “DTC” on the Select Function screen to start reading DTCs.
- When the DTCs from the system have been read, the Save Successful screen displays.

Save Successful screen



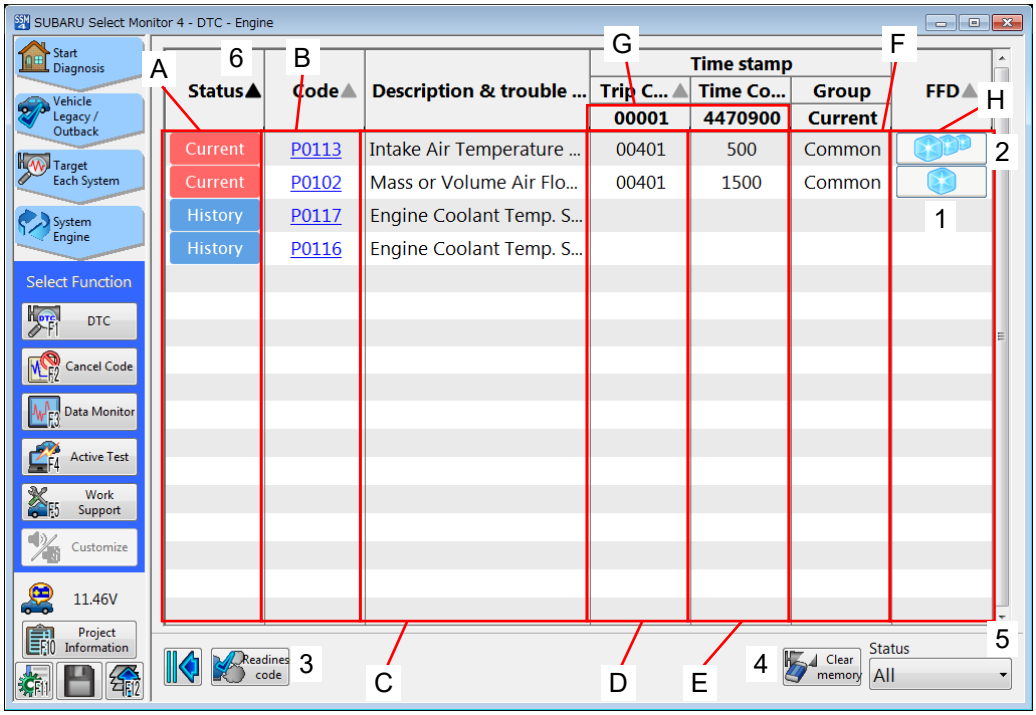
SMU-00211

- Click <1> “OK” on the Save Successful screen to display the DTC display screen.

Notes

- The results are automatically saved.

DTC display screen



SMU-10035

Screen layout

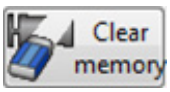
A	Status	This displays the DTC status. Refer to the following table on status types.
B	Code	This displays the DTC. Systems with detail codes at the end of DTCs are displayed as such. Click the DTC display to start the DTC manual link.
C	Description & trouble part	This displays the name of the DTC.
D	Trip count	This displays the trip count.
E	Elapsed time that ignition is on	This displays the elapsed time that the ignition is on. The unit is displayed in milliseconds (ms).
F	Group	This displays either “Shared” or “Independent”. “Shared” is a counter of data retrieved from BIU. “Independent” is an independent counter in the ECU.
G	Current information	This displays the current time for the trip count and the elapsed time after the ignition is on.
H	FFD	The existence of freeze frame data is displayed with buttons. DTCs displayed with the symbol contain freeze frame data. DTCs displayed with the symbol contain time series freeze frame data.

Notes

- The displayed column varies according to the selected system.
- Columns can be widened by dragging the boundary of the header cell in each column.
- Column width can be automatically matched to the longest text string in the column by double-clicking the boundary of the header cell in each column.

Status types

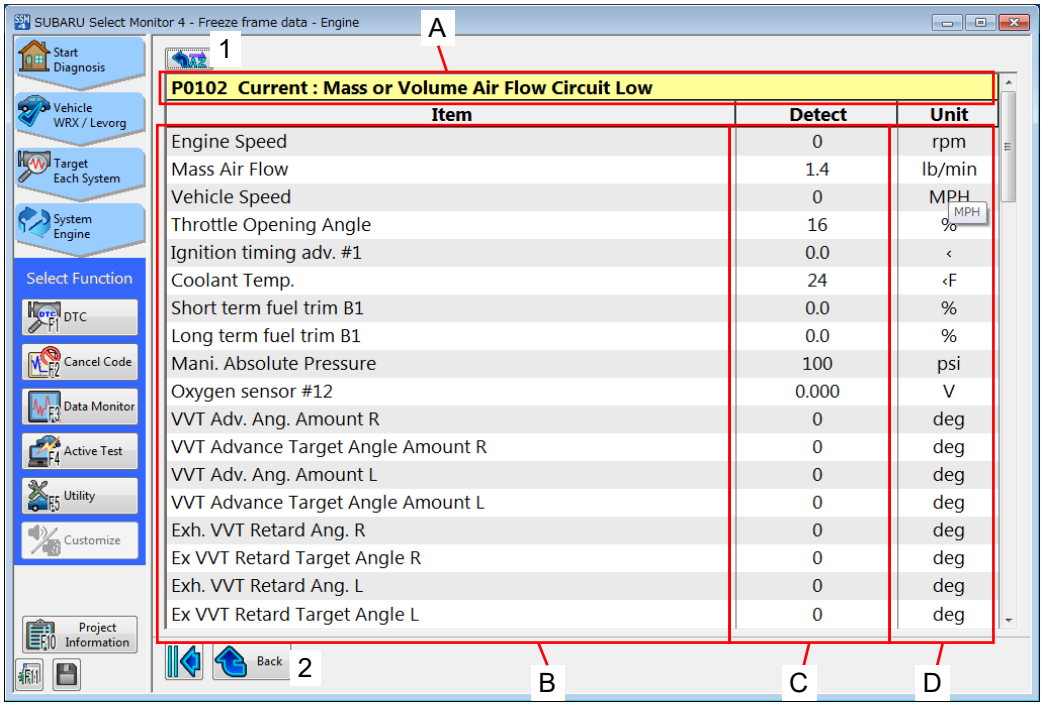
Current	Newest	History	History one before
History two before	History three before	Pending	No DTC

1		This displays freeze frame data.
2		This displays time series freeze frame data.
3		This displays the readiness code display screen. This can be clicked only when the readiness code function is supported.
4		This deletes all displayed DTCs and freeze frame data and then rereads the DTCs. Refer to “9-3. Clearing memory” for more information.
5		This filters the display of DTCs from selected status. All: Cancel the search conditions. Current: This narrows down diagnosis codes with “Current” status and displays them. Historic: This narrows down diagnosis codes without “Current” status and displays them.
6		Display the data in ascending sequence.

9-1-1. Displaying freeze frame data

- Click the <1> symbol on the DTC display screen to display the freeze frame data display screen.

Freeze frame data display screen



SMU-00068

Screen layout

A	DTC	This displays DTC information such as the code, status, description, and area experiencing trouble.
B	Item	This displays the signal name for freeze frame data. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
C	Detect	This displays the value of signals at the moment the DTC was detected.
D	Unit	This displays the unit of measure for each item.

Notes

- Columns can be widened by dragging the boundary of the header cell in each column.
- Column width can be automatically matched to the longest text string in the column by double-clicking the boundary of the header cell in each column.

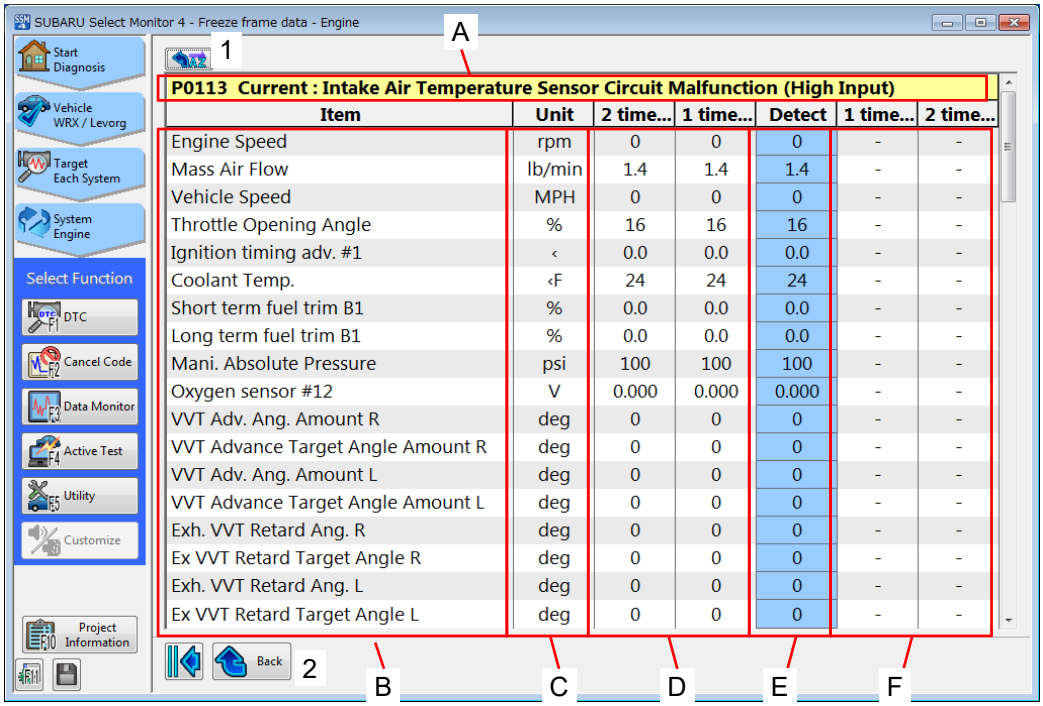
Operating instructions

1		This returns the signal display order to the default settings. The default settings are the order in which codes were acquired.
2		This returns the display to the DTC display screen.

9-1-2. Displaying time series freeze frame data

- Click the <2> symbol on the DTC display screen to display the time series freeze frame data display screen.

Time series freeze frame data display screen



SMU-00069

Screen layout

A	DTC	This displays DTC information such as the code, status, description, and area experiencing trouble.
B	Item	This displays the signal name for freeze frame data. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu. Up to five parameters of data including pre-detection, detection, and post-detection can be displayed on one screen.
C	Unit	This displays the unit of measure for each item.
D	*Previous	This displays the value of signals before the moment the DTC was detected. The timing at which this is stored is not constant or predetermined.
E	Detect	This displays the value of signals at the moment the DTC was detected.
F	*Subsequent	This displays the value of signals after the moment the DTC was detected. The timing at which this is stored is not constant or predetermined.

Notes

- Columns can be widened by dragging the boundary of the header cell in each column.
- Column width can be automatically matched to the longest text string in the column by double-clicking the boundary of the header cell in each column.

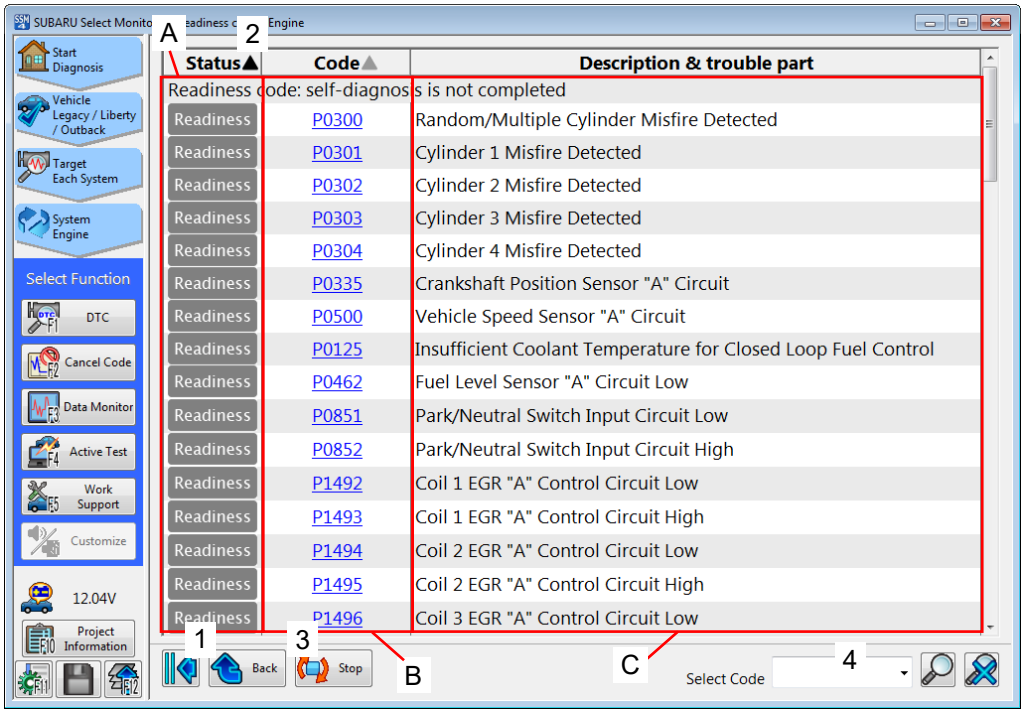
Operating instructions

1		This returns the signal display order to the default settings. The default settings are the order in which codes were acquired.
2		This returns the display to the DTC display screen.

9-1-3. Readiness code display

- Click <3> “Readiness code” on the DTC display screen to display the readiness code display screen.

Readiness code display screen



SMU-10038

Screen layout

A	Status	This displays the DTC status. The status for all codes on the readiness code display screen is “Readiness”.
B	Code	This displays the DTC. Systems with detail codes at the end of DTCs are displayed as such.
C	Description & trouble part	This displays the name of the DTC.

Notes

- Columns can be widened by dragging the boundary of the header cell in each column.
- Column width can be automatically matched to the longest text string in the column by double-clicking the boundary of the header cell in each column.

Operating instructions

1		This returns the display to the DTC display screen.
2		Display the data in ascending sequence.
3		Start automatic update of the Readiness Code
3		Stop automatic update of the Readiness Code
4		In this column, keywords for refining the diagnostic code should be input. Input an arbitrary diagnostic code or select the diagnostic code that was input before from the pulldown menu and click . The refined diagnostic code will be displayed. Furthermore, clicking on can release the refined diagnostic code display.

Notes

- How to display the Readiness Code of BRZ.
  Please click on the "Work Support" of the function selection screen. And please select the "Readiness Codes" of work support item screen.

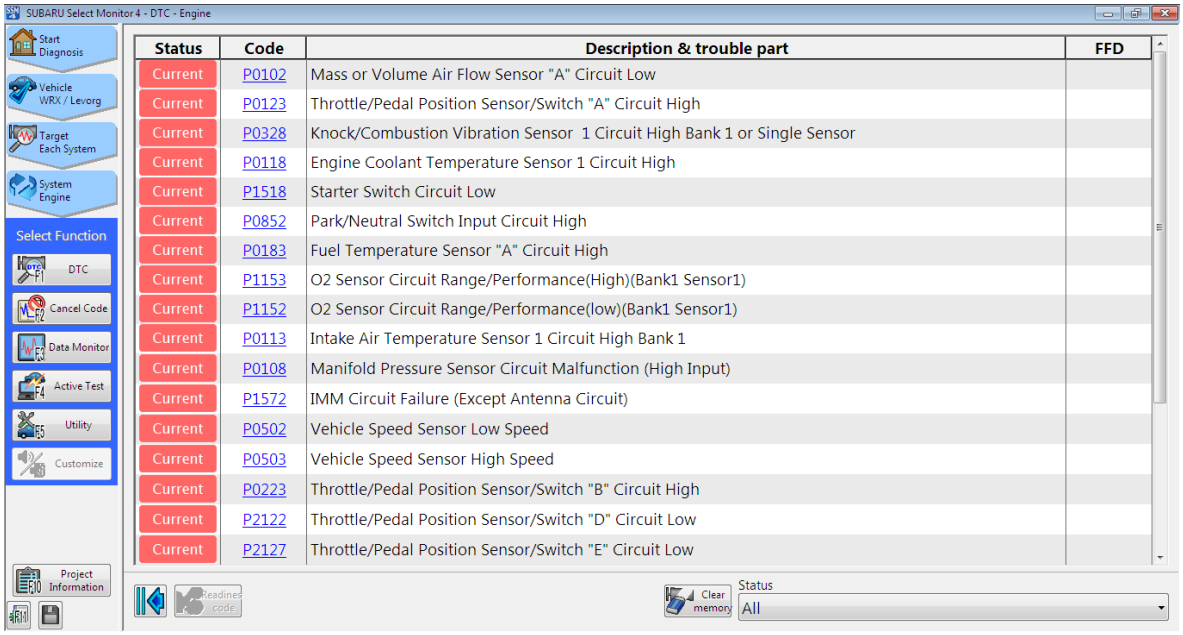
9-1-4. DTC Manual Link

DTC Manual Link is the fusion of SSM4 and Service Manual on a PC. Until now it was necessary to search the Service Manual for each model and then to search the corresponding page. However, when a Hybrid-version Service Manual compatible with DTC Manual Link is installed on a PC where SSM4 is installed, the corresponding diagnosis page of the Service Manual can be found by simple operation from the DTC detected by “Diagnostic Code(s) Display” of SSM4.DTC Manual Link makes it possible to aim for better efficiency by reducing the time required to search for the corresponding manual.

Notes

- The DTC Manual Link automatically selects the service manual of the vehicle selected on the vehicle selection screen from the PC, and displays the corresponding troubleshooting page.
- This function may not be available in the case of certain vehicle models.
- The DTC Manual Link function can be used in the “Diagnosis Code” of each system.
- The following software is required to use the DTC Manual Link function and should be installed in advance.
  Internet Explorer 5.5 or higher (9.0 or higher recommended)
  Adobe Acrobat Reader 4.0 or higher
  Google Chrome
- Please install the Service Manual for each model to be diagnosed in advance for use of the DTC Manual Link function. For the installation method, refer to the Installation Manual by clicking “See Installation Manual” in the menu displayed at the time of installation of the Hybrid-version Service Manual. At the time of installation, install the SSM4 PC application first and then the Service Manual. When the SSM4 PC application has not been installed, the Service Manual cannot be installed.No5

- Display the DTC check result screen. (Checking of engine DTC is showed as an example here.)

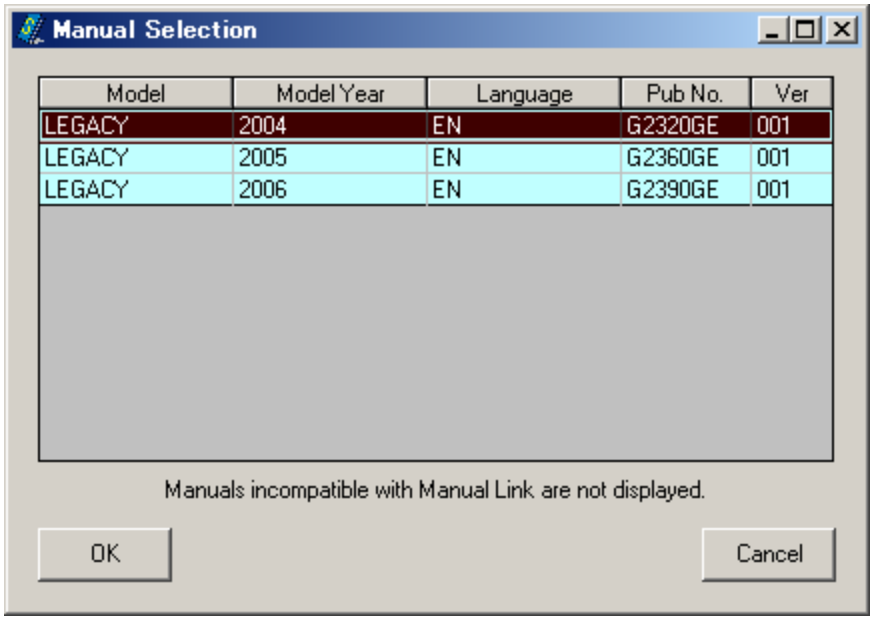


SMU-01576

- Click the Diagnosis Code in the Service Manual you want to read.

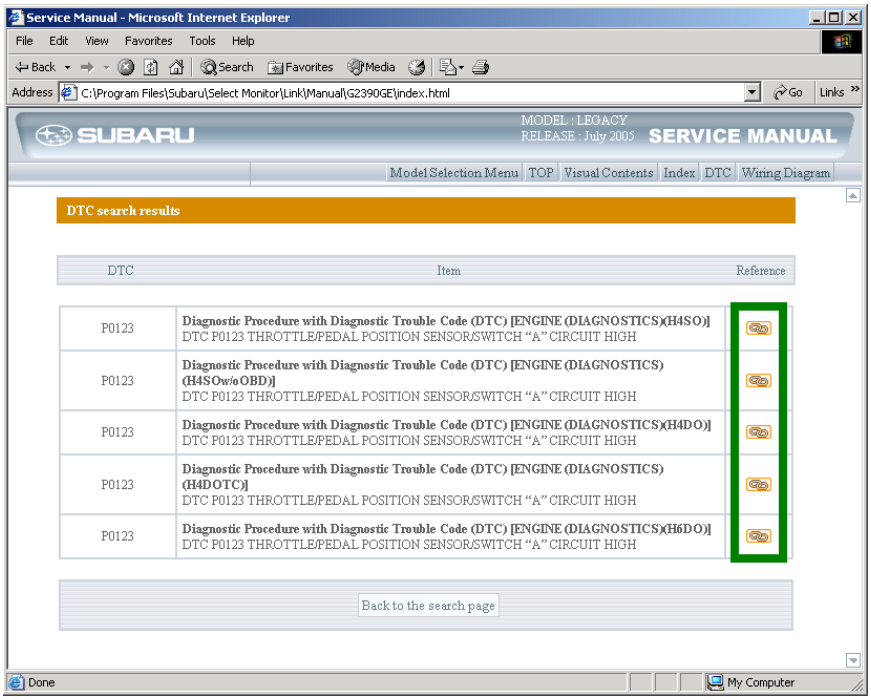
Notes

- If multiple service manuals for the vehicle selected on the vehicle selection screen are installed on the PC or if no manuals are installed on the PC, the vehicle selection screen appears. Select the desired manual and click the [OK] button.



SMU-00884

- The DTC search result screen for the Service Manual is displayed. Click the reference button for the desired model.

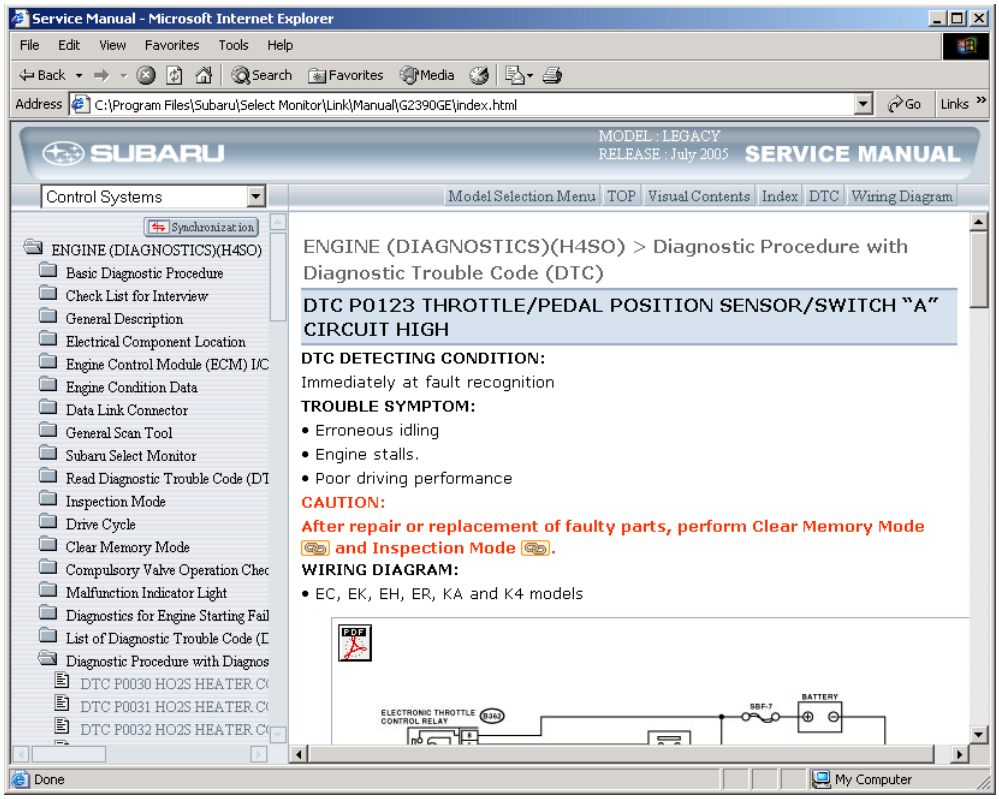


SMU-00885

Notes

- This screen is not displayed when the search result shows only one model.

- The fault diagnosis screen for the Service Manual is displayed. For the operation procedure from this point on, refer to the “Service Manual Guide”.

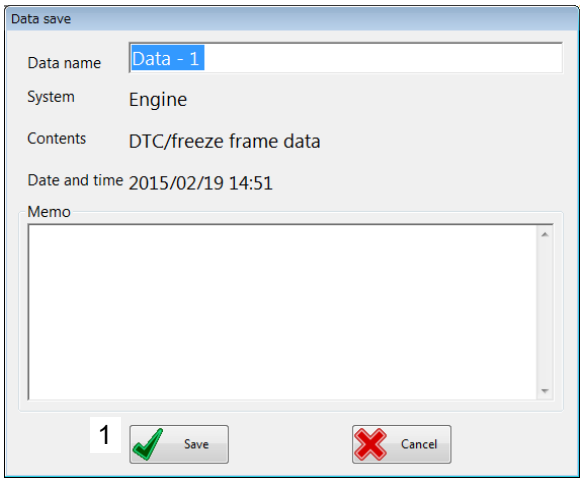


SMU-00886

9-2. Saving data

- Click the in the menu display area of each screen to display the data save screen.

Data save screen



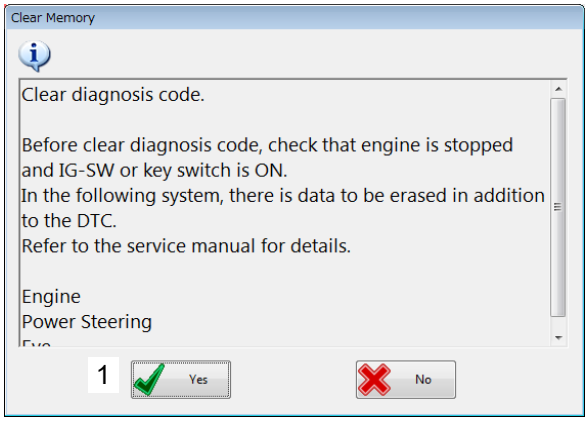
SMU-00071

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

9-3. Clearing memory

- Click <4> “Clear memory” on the DTC display screen to display the confirm deletion screen.

Confirm deletion screen



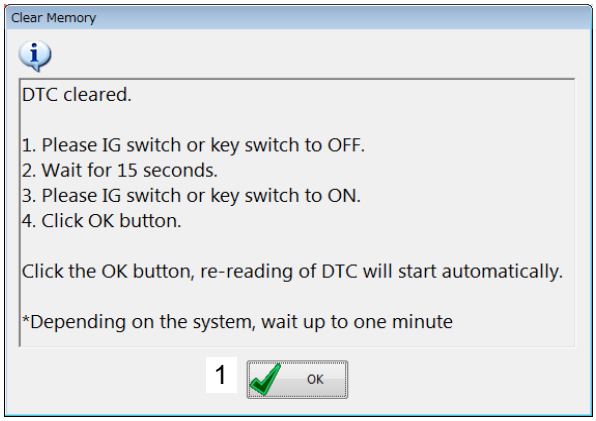
SMU-00072

Perform this task in accordance with the messages displayed on the confirm deletion screen.
Click <1> “Yes” to start deleting the DTCs.
Once the DTCs are successfully deleted, the confirm reacquisition screen displays.

Important

- Before deleting trouble codes, make sure the engine is not running and that the starter switch (ignition switch) is on.
- Deleting trouble codes also deletes the freeze frame data.
- Before deleting trouble codes, make sure that deleting the trouble codes from the system will not cause any problems.
  Deleted codes cannot be restored.

Confirm reacquisition screen



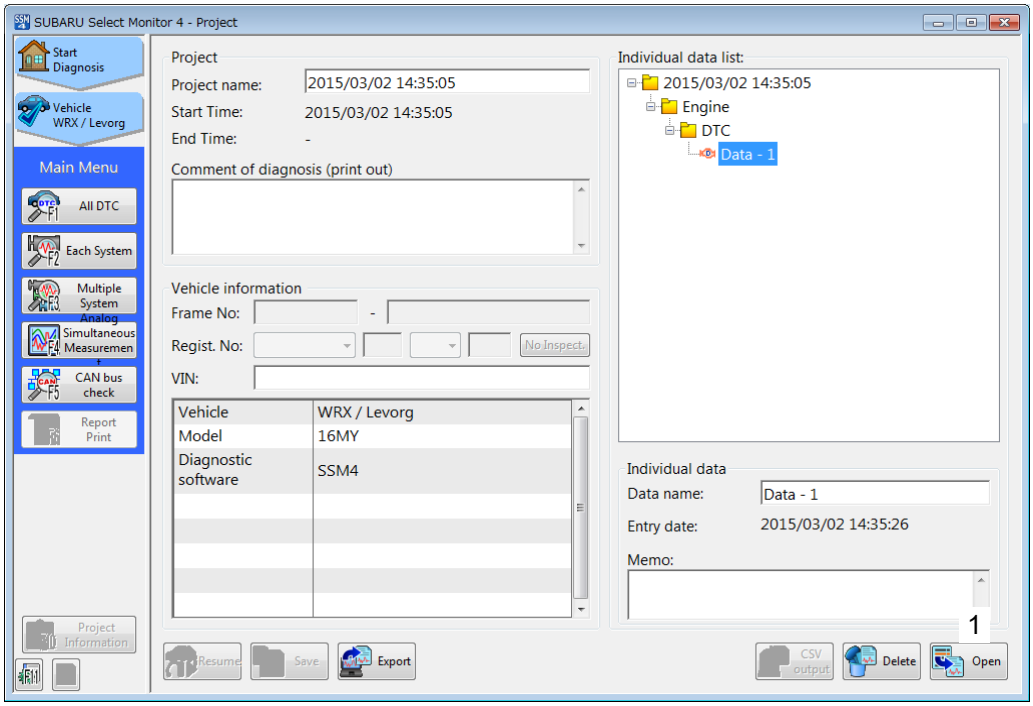
SMU-00073

Perform this task in accordance with the messages displayed on the confirm reacquisition screen.
Click <1> “OK” to start rereading the DTCs.

9-4. Loading data

- Click “Project Information” in the menu display area to display the project screen during the diagnosis.

Project screen



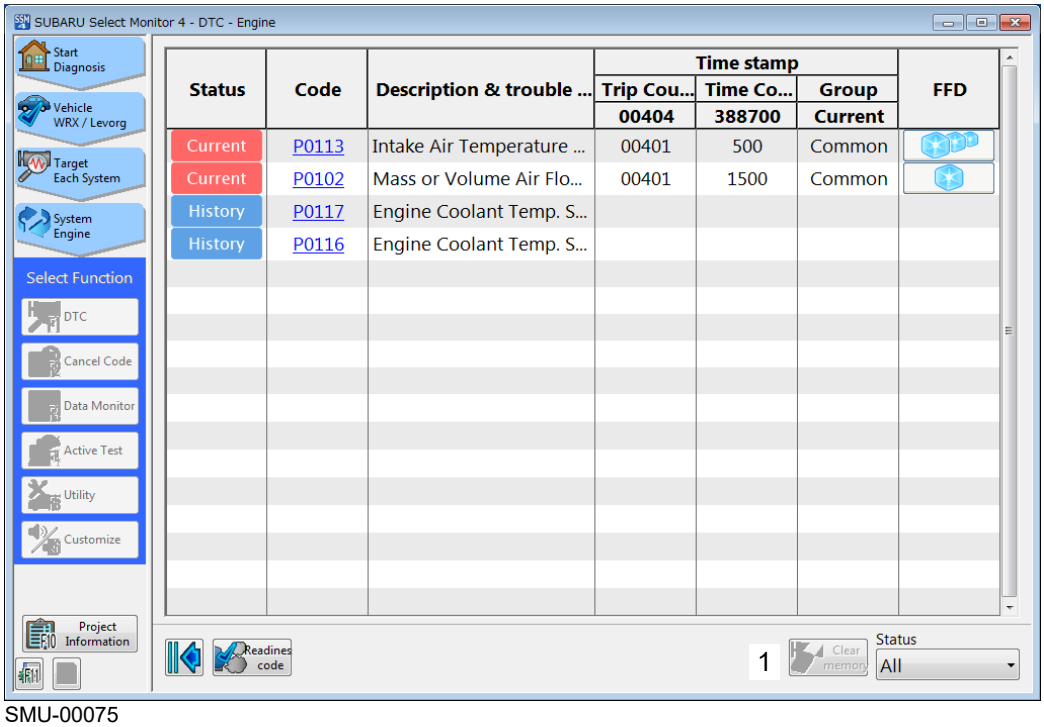
SMU-00074

- Double-click on the desired individual DTC data file from the individual data file list on the project screen or select the desired data and click <1> “Open” to display the load data screen.

Notes

- For the automatic saving data, “Auto save” is written in the memo field.
- The saved DTC data is under the “DTC” in the individual data list.

Load data screen (DTC display)



SMU-00075

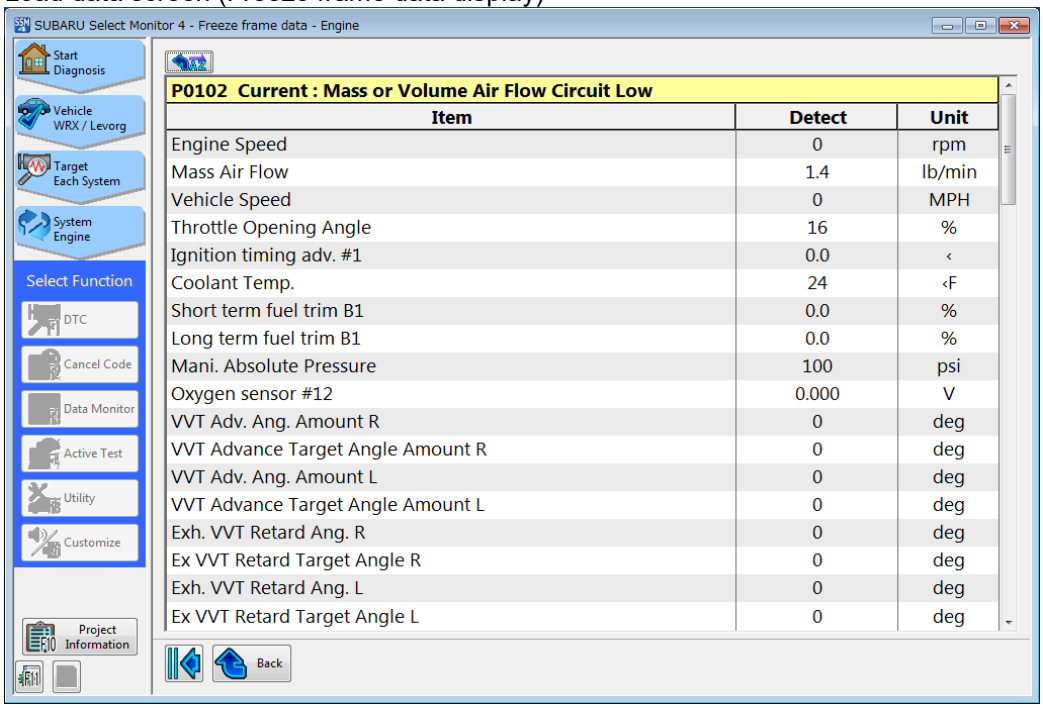
Notes

- Refer to “9-1. DTC display” for more information.
- You cannot click on <1> “Clear memory” from the load data screen.

9-4-1. Loading freeze frame data

- Click <1> on the load data screen (DTC display) to display the load data screen (Freeze frame data display).

Load data screen (Freeze frame data display)



P0102 Current : Mass or Volume Air Flow Circuit Low		
Item	Detect	Unit
Engine Speed	0	rpm
Mass Air Flow	1.4	lb/min
Vehicle Speed	0	MPH
Throttle Opening Angle	16	%
Ignition timing adv. #1	0.0	‹
Coolant Temp.	24	‹F
Short term fuel trim B1	0.0	%
Long term fuel trim B1	0.0	%
Mani. Absolute Pressure	100	psi
Oxygen sensor #12	0.000	V
VVT Adv. Ang. Amount R	0	deg
VVT Advance Target Angle Amount R	0	deg
VVT Adv. Ang. Amount L	0	deg
VVT Advance Target Angle Amount L	0	deg
Exh. VVT Retard Ang. R	0	deg
Ex VVT Retard Target Angle R	0	deg
Exh. VVT Retard Ang. L	0	deg
Ex VVT Retard Target Angle L	0	deg

SMU-00076

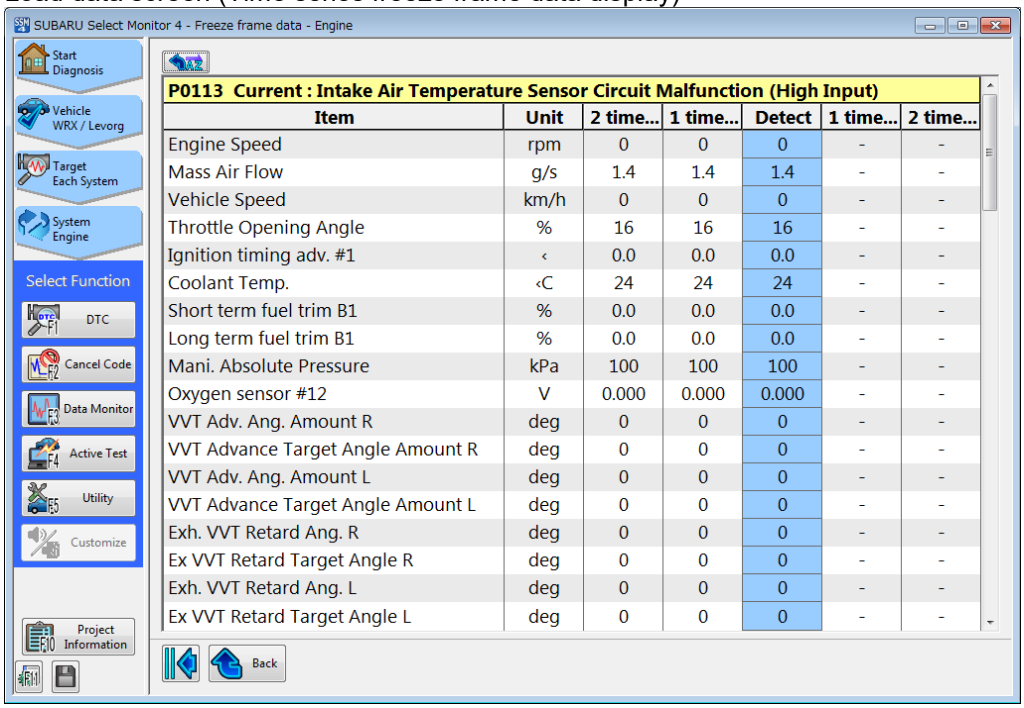
Notes

- Refer to “9-1-1. Displaying freeze frame data” for more information.

9-4-2. Loading time series freeze frame data

- Click the <2> on the load data screen (DTC display) to display the load data screen (Time series freeze frame data display).

Load data screen (Time series freeze frame data display)



Item	Unit	2 time...	1 time...	Detect	1 time...	2 time...
Engine Speed	rpm	0	0	0	-	-
Mass Air Flow	g/s	1.4	1.4	1.4	-	-
Vehicle Speed	km/h	0	0	0	-	-
Throttle Opening Angle	%	16	16	16	-	-
Ignition timing adv. #1	‹	0.0	0.0	0.0	-	-
Coolant Temp.	‹C	24	24	24	-	-
Short term fuel trim B1	%	0.0	0.0	0.0	-	-
Long term fuel trim B1	%	0.0	0.0	0.0	-	-
Mani. Absolute Pressure	kPa	100	100	100	-	-
Oxygen sensor #12	V	0.000	0.000	0.000	-	-
VVT Adv. Ang. Amount R	deg	0	0	0	-	-
VVT Advance Target Angle Amount R	deg	0	0	0	-	-
VVT Adv. Ang. Amount L	deg	0	0	0	-	-
VVT Advance Target Angle Amount L	deg	0	0	0	-	-
Exh. VVT Retard Ang. R	deg	0	0	0	-	-
Ex VVT Retard Target Angle R	deg	0	0	0	-	-
Exh. VVT Retard Ang. L	deg	0	0	0	-	-
Ex VVT Retard Target Angle L	deg	0	0	0	-	-

SMU-00077

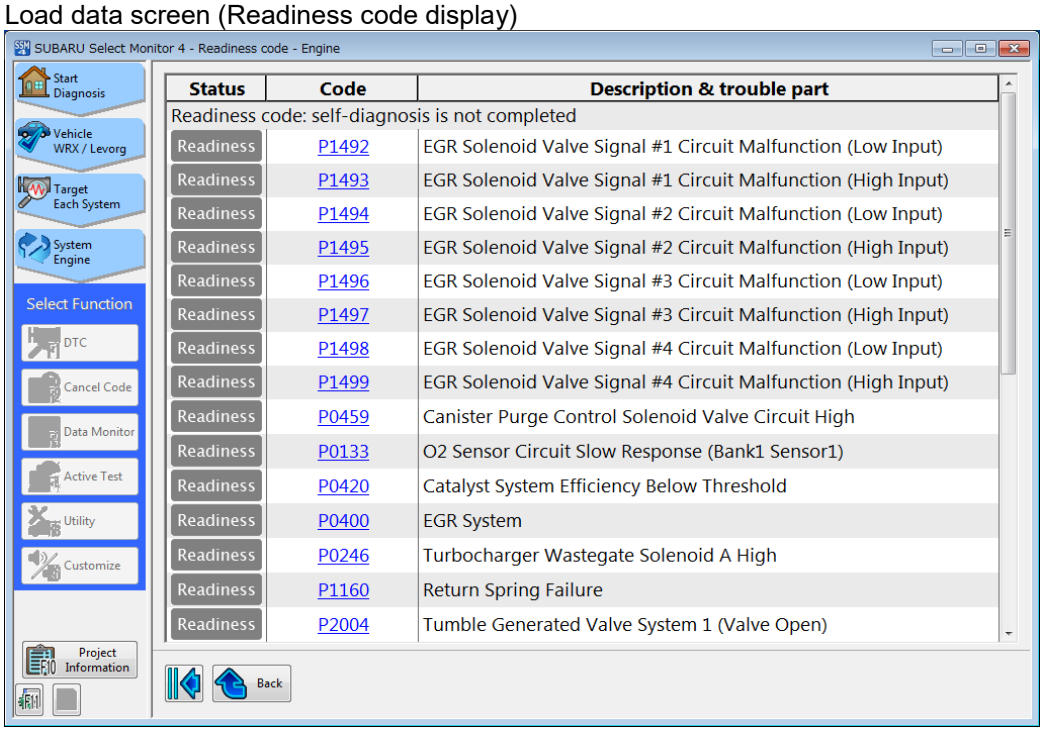
Notes

- Refer to “9-1-2. Displaying time series freeze frame data” for more information.

9-4-3. Loading readiness codes

- Click <3> “Readiness code” on the load data screen (DTC display) to display the load data screen (Readiness code display).

Load data screen (Readiness code display)



Status	Code	Description & trouble part
Readiness code: self-diagnosis is not completed		
Readiness	P1492	EGR Solenoid Valve Signal #1 Circuit Malfunction (Low Input)
Readiness	P1493	EGR Solenoid Valve Signal #1 Circuit Malfunction (High Input)
Readiness	P1494	EGR Solenoid Valve Signal #2 Circuit Malfunction (Low Input)
Readiness	P1495	EGR Solenoid Valve Signal #2 Circuit Malfunction (High Input)
Readiness	P1496	EGR Solenoid Valve Signal #3 Circuit Malfunction (Low Input)
Readiness	P1497	EGR Solenoid Valve Signal #3 Circuit Malfunction (High Input)
Readiness	P1498	EGR Solenoid Valve Signal #4 Circuit Malfunction (Low Input)
Readiness	P1499	EGR Solenoid Valve Signal #4 Circuit Malfunction (High Input)
Readiness	P0459	Canister Purge Control Solenoid Valve Circuit High
Readiness	P0133	O2 Sensor Circuit Slow Response (Bank1 Sensor1)
Readiness	P0420	Catalyst System Efficiency Below Threshold
Readiness	P0400	EGR System
Readiness	P0246	Turbocharger Wastegate Solenoid A High
Readiness	P1160	Return Spring Failure
Readiness	P2004	Tumble Generated Valve System 1 (Valve Open)

SMU-00078

Notes

- Refer to “9-1-3. Readiness code display” for more information.

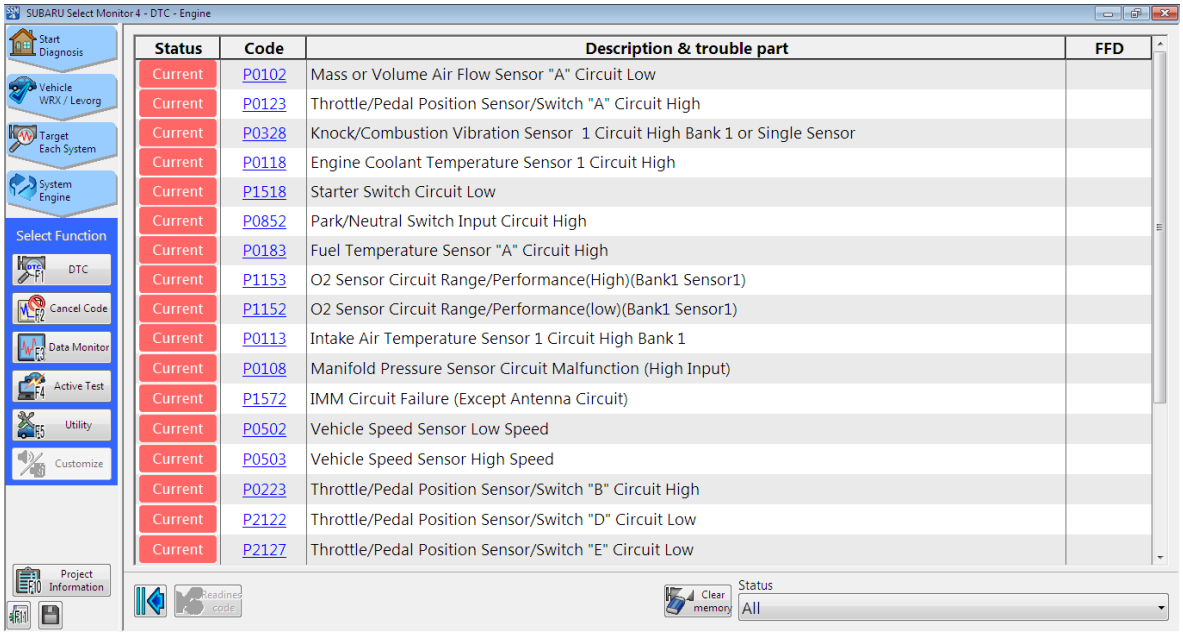
9-4-4. DTC Manual Link

DTC Manual Link is the fusion of SSM4 and Service Manual on a PC. Until now it was necessary to search the Service Manual for each model and then to search the corresponding page. However, when a Hybrid-version Service Manual compatible with DTC Manual Link is installed on a PC where SSM4 is installed, the corresponding diagnosis page of the Service Manual can be found by simple operation from the DTC detected by “Diagnostic Code(s) Display” of SSM4.DTC Manual Link makes it possible to aim for better efficiency by reducing the time required to search for the corresponding manual.

Notes

- The DTC Manual Link automatically selects the service manual of the vehicle selected on the vehicle selection screen from the PC, and displays the corresponding troubleshooting page.
- This function may not be available in the case of certain vehicle models.
- The DTC Manual Link function can be used in the “Diagnosis Code” of each system.
- The following software is required to use the DTC Manual Link function and should be installed in advance.
  Internet Explorer 5.5 or higher (9.0 or higher recommended)
  Adobe Acrobat Reader 4.0 or higher
  Google Chrome
- Please install the Service Manual for each model to be diagnosed in advance for use of the DTC Manual Link function. For the installation method, refer to the Installation Manual by clicking “See Installation Manual” in the menu displayed at the time of installation of the Hybrid-version Service Manual. At the time of installation, install the SSM4 PC application first and then the Service Manual. When the SSM4 PC application has not been installed, the Service Manual cannot be installed.No5

- Display the DTC check result screen. (Checking of engine DTC is showed as an example here.)

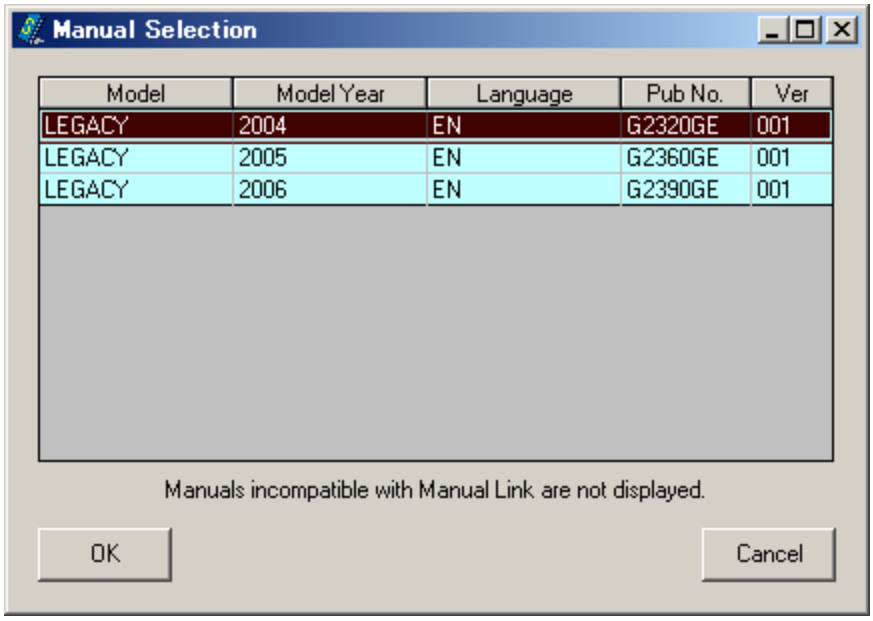


SMU-01576

- Click the Diagnosis Code in the Service Manual you want to read.

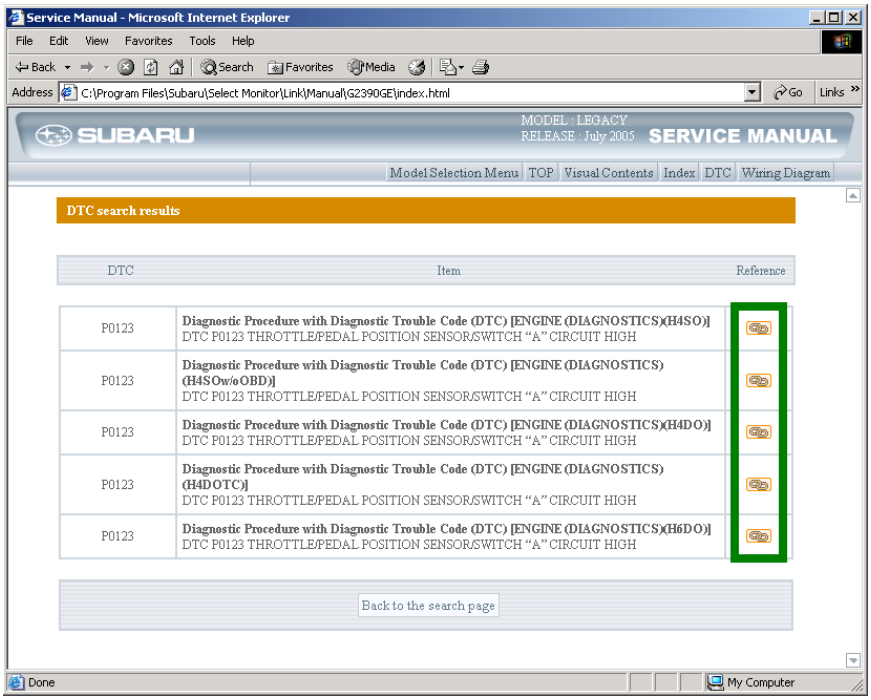
Notes

- If multiple service manuals for the vehicle selected on the vehicle selection screen are installed on the PC or if no manuals are installed on the PC, the vehicle selection screen appears. Select the desired manual and click the [OK] button.



SMU-00884

- The DTC search result screen for the Service Manual is displayed. Click the reference button for the desired model.

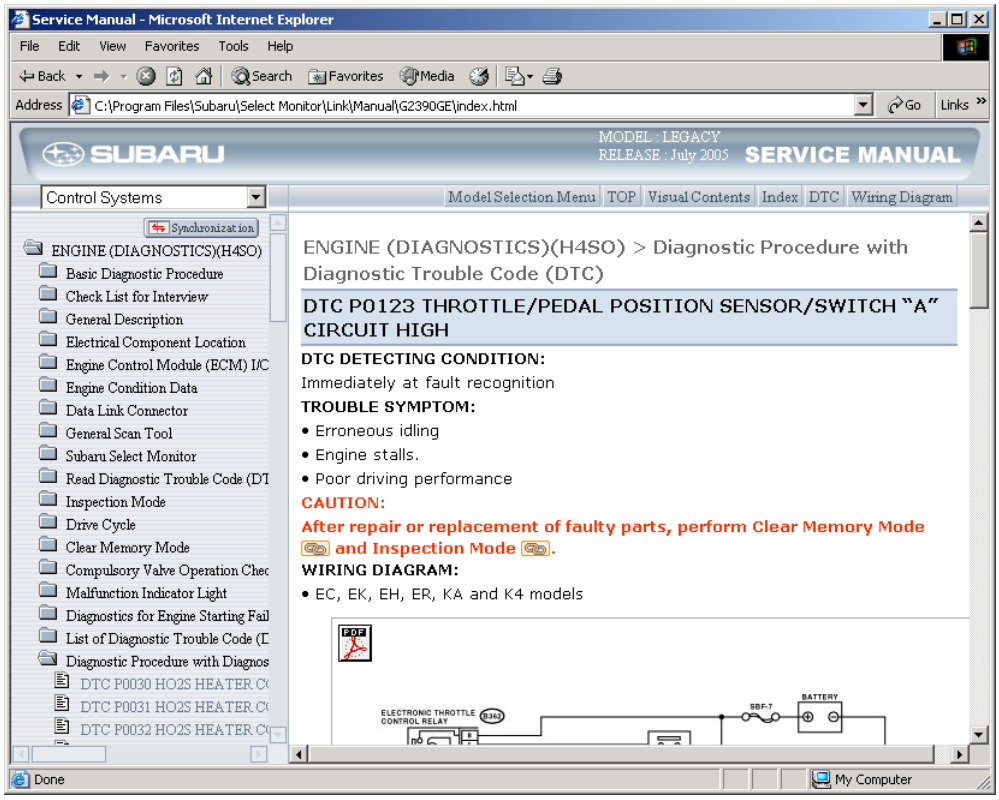


SMU-00885

Notes

- This screen is not displayed when the search result shows only one model.

- The fault diagnosis screen for the Service Manual is displayed. For the operation procedure from this point on, refer to the “Service Manual Guide”.



SMU-00886

10. Cancel code

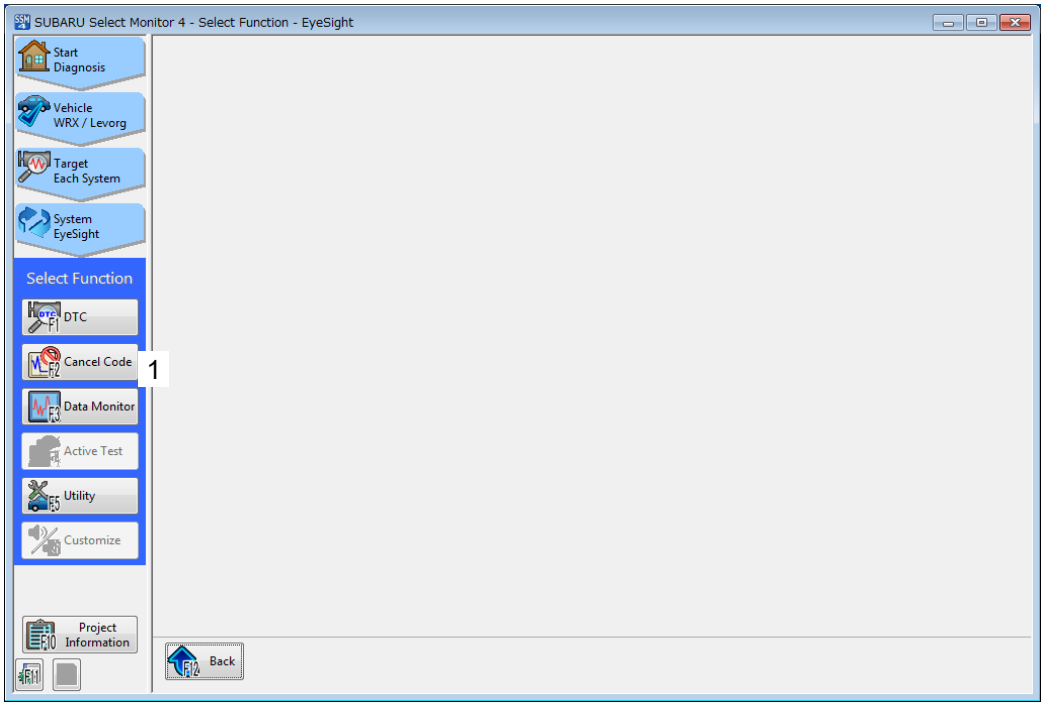
This enables you to check cancel codes stored in control modules.

10-1. Cancel code display

Notes

- The following example in which “EyeSight” is selected on the select system screen will be described.

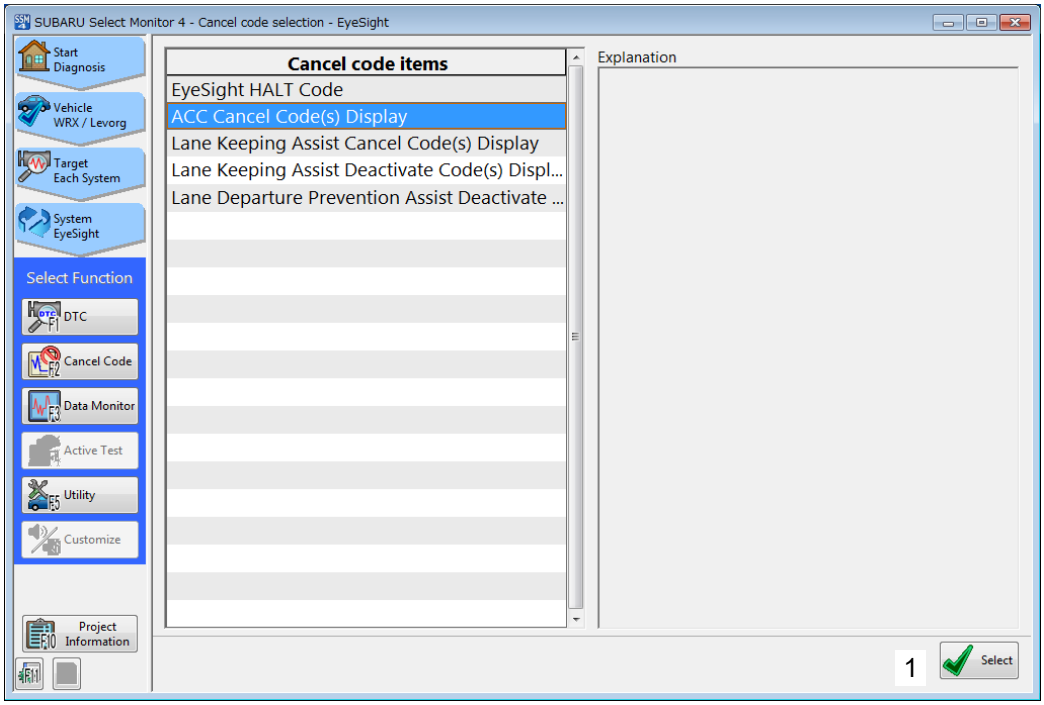
Select function screen



SMU-00079

- Click <1> “Cancel Code” on the select function screen to display the select data screen.

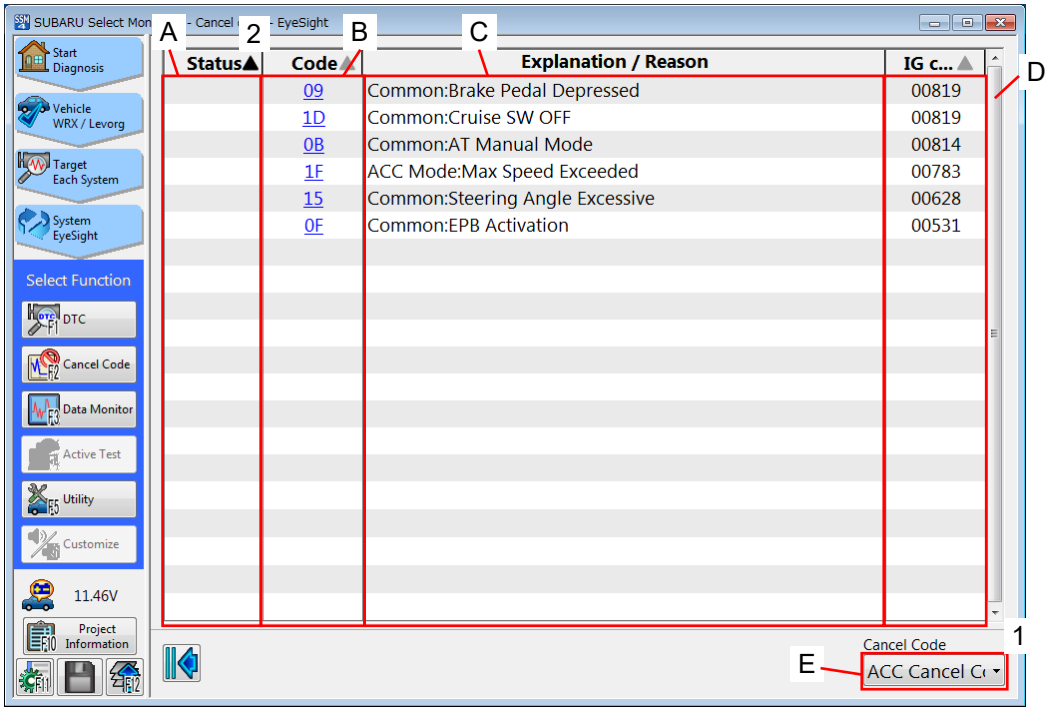
Select data screen



SMU-00080

- After selecting the cancel code to display on the select data screen, click <1> "Select" to display the cancel code display screen.

Cancel code display screen



SMU-10037

Notes

- "No Code" is displayed in the status column if there are no cancel codes.

Screen layout

A	Status	This displays the status of cancel codes. Refer to the following table on status types. Status may not be displayed depending on the system.
B	Code	This displays the cancel codes.
C	Explanation / Reason	This displays the name of cancel codes.
D	IG counter	This displays the IG counter.
E	Cancel code	This displays the group of selected cancel code.

Notes

- The displayed column varies according to the selected system.

Status types

Current	History	one before	two before
three before	four before	No code	

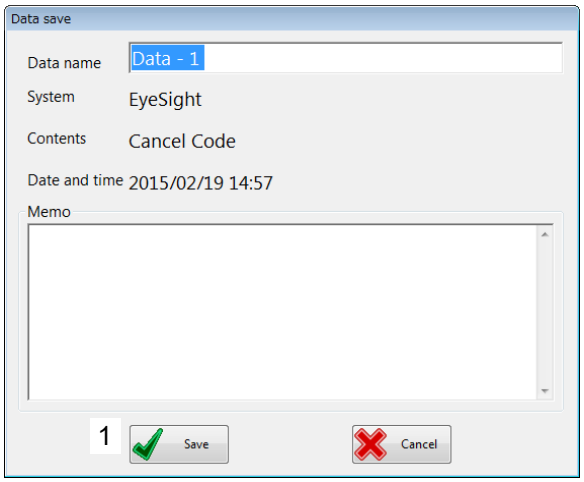
Operating instructions

1		This selects the group of cancel code to view from the pull-down menu. Selections cannot be made if there is only one type of displayable cancel code.
2		Display the data in ascending sequence.

10-2. Saving data

- Click the in the menu display area to display the data save screen.

Data save screen



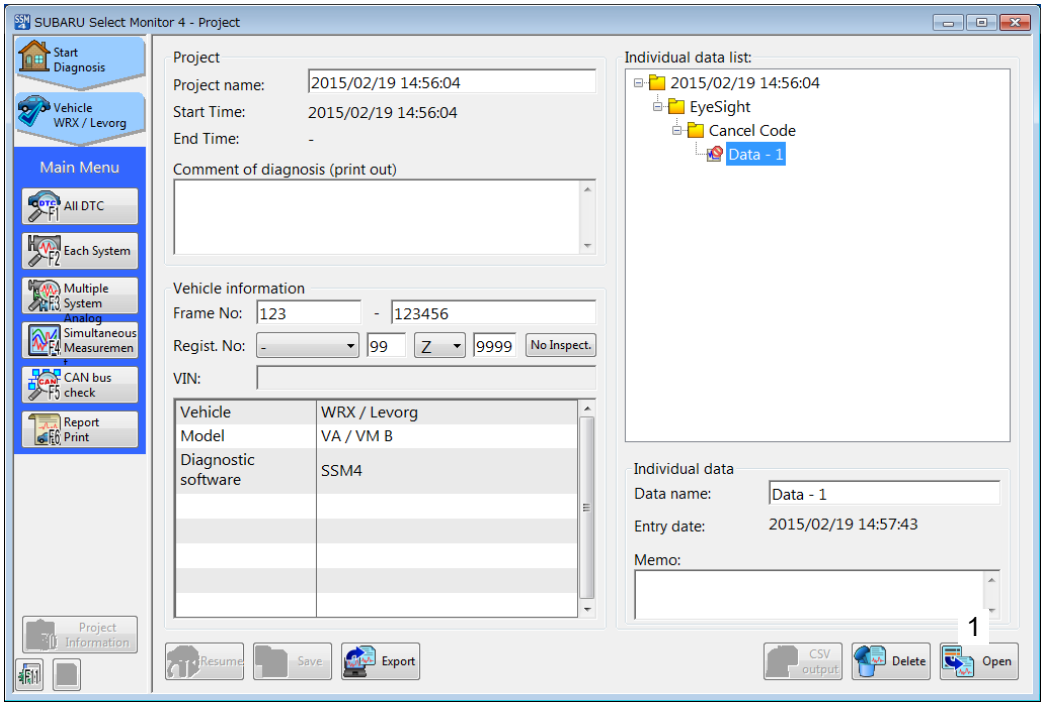
SMU-00082

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

10-3. Loading data

- Click “Project Information” in the menu display area to display the project screen during the diagnosis.

Project screen



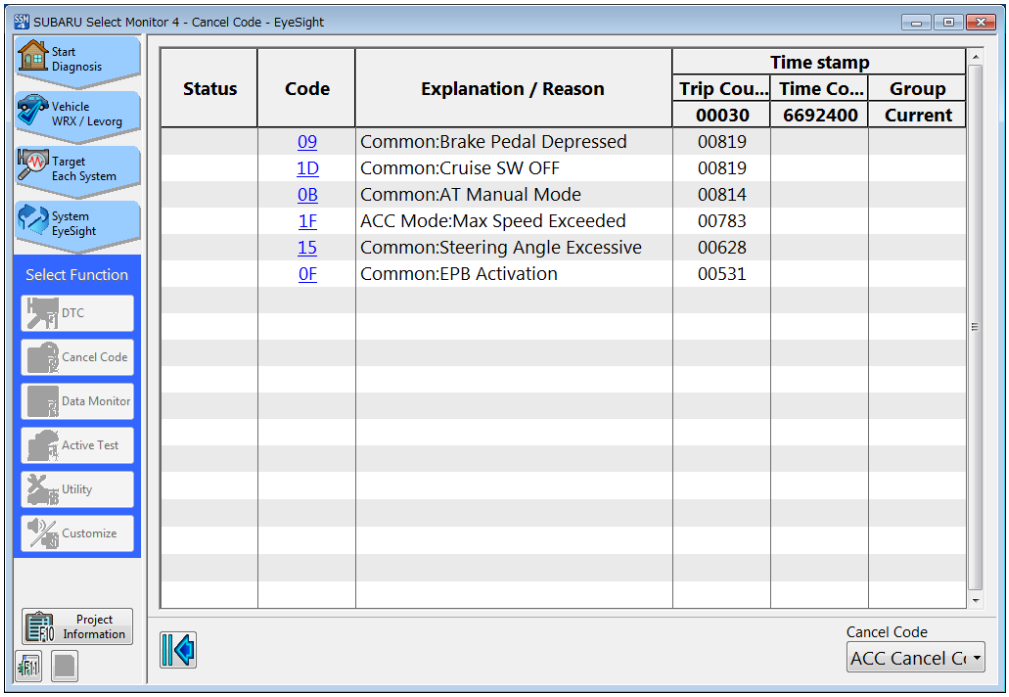
SMU-00083

- Double-click on the individual data of the desired cancel code from the individual data file list on the project screen or select the desired data and click <1> “Open” to display the load data screen.

Notes

- For the automatic saving data, “Auto save” is written in the memo field.
- The saved cancel code data is under the “Cancel Code” in the individual data list.

Load data screen



SMU-00084

Notes

- Refer to “10-1. Cancel code display” for more information.

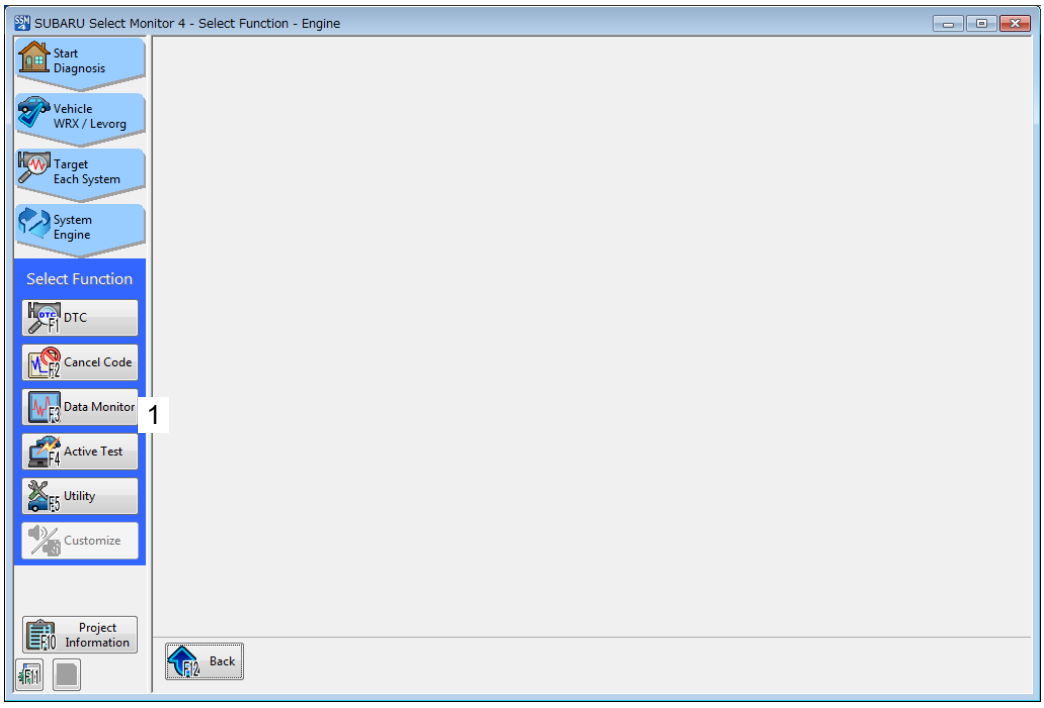
11. Data monitor

This enables you to measure control data and input and output data into/from the control module in the control system compatible with SSM4.

This enables you to display the digital data as well as display data in graphs.

11-1. Select signals

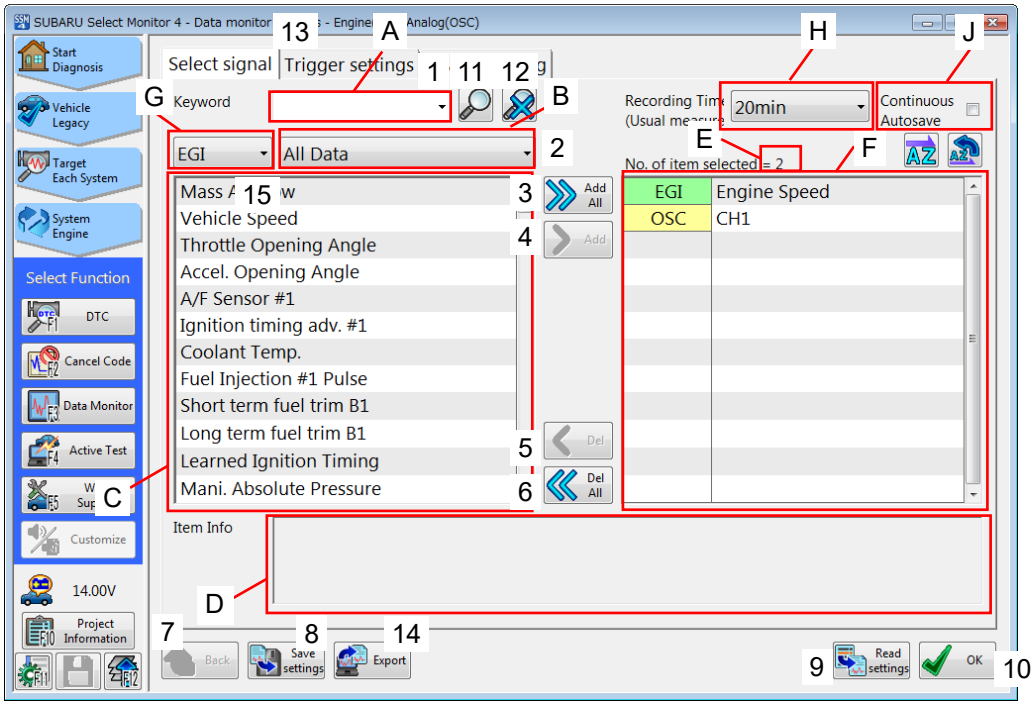
Select function screen



SMU-00085

- Click <1> “Data Monitor” on the select function screen to display the select signal screen.

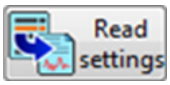
Select signal screen



SMU-00086

Screen layout

A	Keyword	This field is where keywords used to filter signals are entered. This enables you to select previously entered keywords from the pull-down menu.
B	Signal group	This is a pull-down menu used to select signal groups.
C	List of selectable signals	This displays measurable signals by the system during diagnostics. The signals displayed differ depending on the selected signal group.
D	Item Info	This displays information on signals selected from the list of selectable signals. Item information may not be displayed depending on the selected signal.
E	No. of item selected	This displays the number of signal items displayed in the list of selected signals.
F	List of selected signals	This displays the signals selected from the list of selectable signals.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.
H	REC Time (Normal)	This pull-down menu is for setting the maximum logging time allowed per data monitoring measurement.
J	Continuous Autosave	By placing a checkmark in the checkbox, data is repeatedly and automatically saved and remeasured during the set maximum logging time. Enable this option to log monitored data beyond the maximum logging time.

1		This is used to filter the display of signals containing keywords. Enter a keyword or select one from the pull-down menu and then click <11> to filter signals. Click <12> to remove the filter.
2		Signals registered in signal groups selected from the pull-down menu are displayed in the list of selectable signals. Selecting “All Data” displays all signals.
3		This adds measurable signals to the list of selected signals. The insufficient signal against the upper limit 150 of the number of signals should be added.
4		This adds selected signals to the list of selected signals. Multiple signals can be selected at the same time. The upper limit of the number of signals which can be added is 150.
5		This deletes selected signals to the list of selected signals. Multiple signals can be selected at the same time.
6		This removes signals from the list of selected signals.
7		This returns the system to the data monitor screen. You cannot return to the select function screen if “Data Monitor” on the select function screen is clicked while configuring the data monitor.
8		This saves the data monitor settings. This saves signal selections and trigger settings.
9		This loads saved data monitor settings.
10		This displays the data monitor screen.
14		Exports data monitoring settings as a file.
15		Signals registered under the system name selected from the pull-down menu are displayed in the “List of selectable signals”. Selecting “OSC” displays the channel for analog measurement.

Notes

- The saved data monitor setting is also available other PC.
- The signals displayed in the list of selectable signals when “All Data” is selected differ depending on the system used and the vehicle for which the data monitor is performed.
- Signal groups first registered for each system differ depending on the system and the vehicle for which the data monitor is performed.
- When “Custom list” displayed in the signal group pull-down menu is selected, the most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the list of selected signals.
- The most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the area displaying the list of selected signals.
- When performing the data monitor for the first time after installing SSM4, all signal names are displayed in the area that displays the list of selected signals. This cannot be changed. Measured signal names can be changed after loading the configuration file. Measured signals can be changed after the second time.

11-2. Trigger settings

This enables you to configure trigger detection conditions to apply triggers to automatically respond to measured signal values.

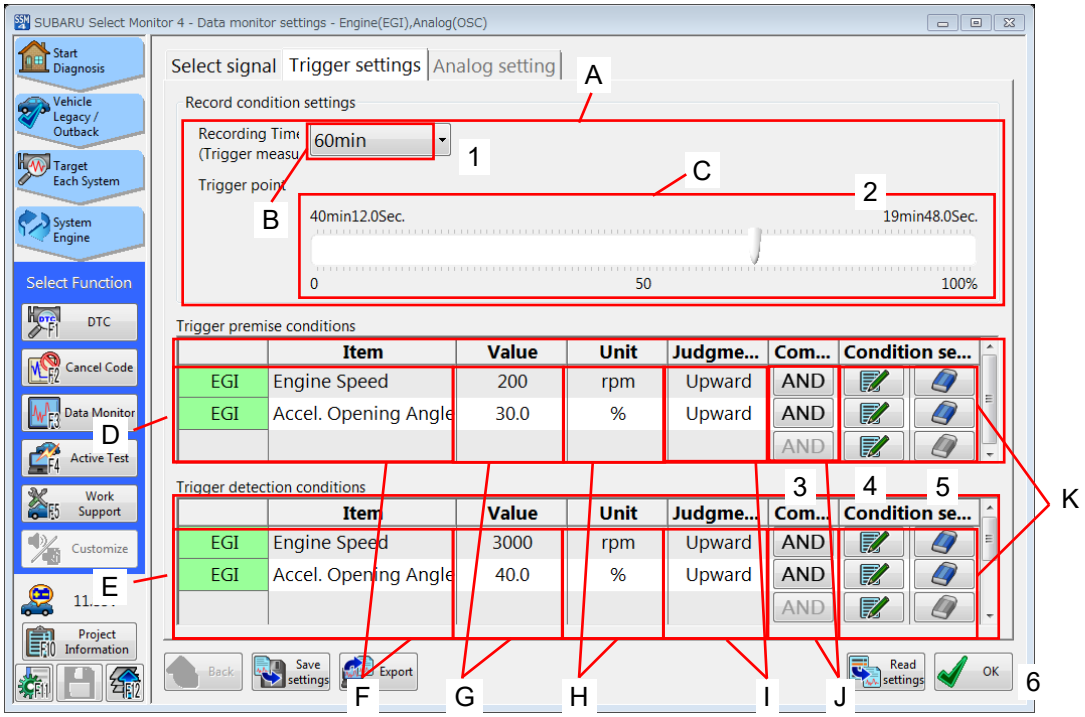
This enables you to configure different conditions for different signals and also configure conditional combinations.

- Click the <13> “Trigger settings” tab on the select signal screen to display the trigger settings screen.

Notes

- Configuring trigger detection conditions is not required to run the data monitor.
  In this case, click <10> “Confirmed” after selecting a signal on the select signal screen.

Trigger settings screen



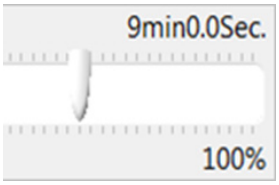
SMU-10029

Screen layout

A	Record condition settings	This displays the configured recording conditions.
B	REC time (Trigger)	This displays the data monitor record time.
C	Trigger point	This displays the trigger point. This displays the amount of record time before and after the timing of triggers. The position of the knob on the slider bar represents the trigger point.
D	Trigger premise conditions	This displays the trigger premise conditions. Triggers do not activate when only the detection conditions are satisfied when preconditions are configured. The preconditions must first be satisfied and then the detection conditions must be satisfied.
E	Trigger detection conditions	This displays the trigger detection conditions.
F	Item	This displays the name of signals for which conditions are configured.
G	Value	This displays the value functioning as the trigger condition.
H	Unit	This displays the unit of measure for each item.
I	Judgment conditions	This displays the judgment conditions for each item.
J	Combination	This displays the button to select the type of conditional combinations.

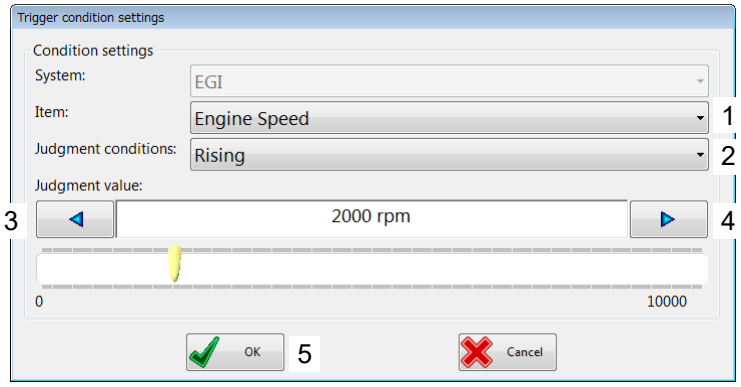
K	Condition setting	This displays buttons for condition settings.

Operating instructions

1		This changes the record time.
2		Move the slider bar knob to change the trigger point. This enables you to setup an estimated value in percentages displayed under the slider bar.
3		This sets the type of conditional combinations. Click to change between “AND” and “OR”.
4		This displays the configure trigger conditions screen. This enables you to configure trigger conditions for each signal.
5		This deletes trigger conditions for each signal.
6		This displays the data monitor screen.

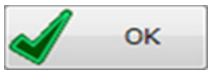
- Click the <4> on the trigger settings screen to display the configure trigger conditions screen.

Configure trigger conditions screen



SMU-00088

Operating instructions

1		This selects the name of signals for which trigger conditions are configured.
2		This changes the judgment conditions.
3		This lowers the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
4		This raises the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
5		This returns the display to the trigger settings screen.

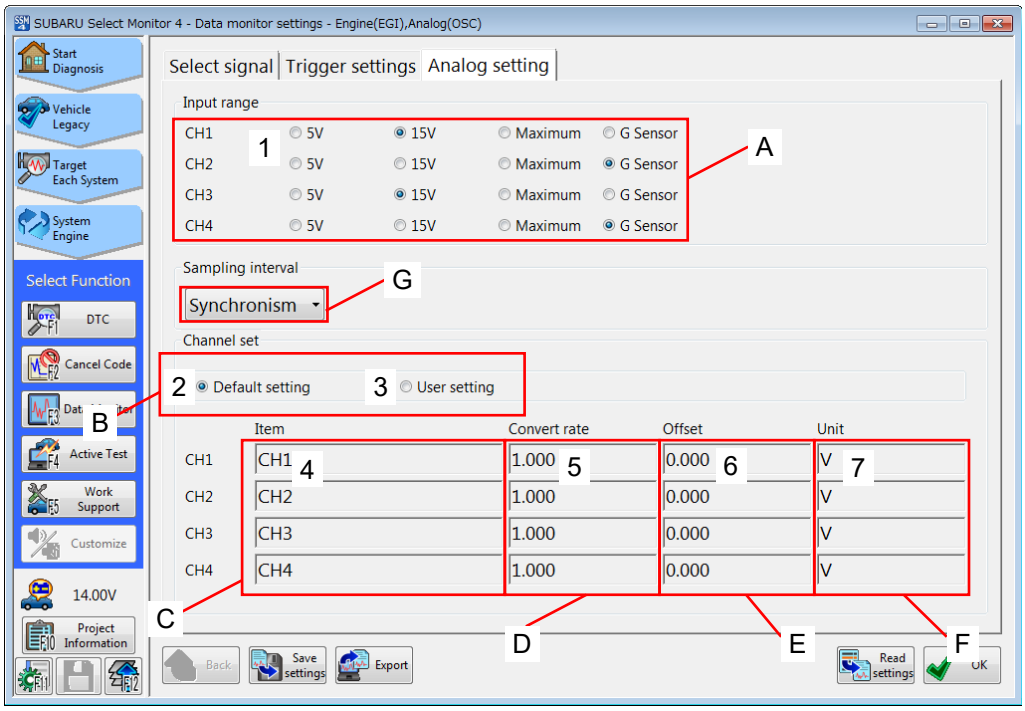
11-3. Analog settings

The analog settings includes input range and channel settings.

This also enables you to save configuration data and load saved configuration files.

- Click the <2> "Analog settings" tab on the select signal screen or the <1> "Analog settings" tab on the trigger settings screen to display the analog settings screen.

Analog settings screen



SMU-10041

Screen layout

A	Input range	This displays the input range for each channel. The input range is selected by clicking the radio button to the left of each item. The following ranges are available for each item. • 5 V: -5 V to +5 V • 15 V: -15 V to +15 V • Maximum: -150 V to +150 V • G sensor: -5V to +5V When measuring the G sensor output with the optional switch box cable, select a “G sensor”. If "G Sensor" is selected, the numeric values for physical quantity (unit: G) conversion are automatically entered in "Convert rate", "Offset" and "Unit ", to indicate the physical quantities (unit: G). The numeric values for physical quantity (unit: G) conversion are as follows. Convert rate : 1.515 Offset : -2.5 Unit : G The output destination channel of each G sensor is as follows. CH2: X-axis output CH3: Y-axis output CH4: Z-axis output Do not select the G sensor for CH1 because the switch box cable cannot physically connect to it.
B	Channel set	This displays the status of channel settings. The channel setting method is selected by clicking the radio button to the left of each item.
C	Item	This displays the channel name of each channel. This enables you to change this as desired.
D	Conversion rate	This displays the conversion rate for each channel. This displays values as they are measured in accordance with the multiplier configured for analog measured signal values.

E	Offset	This displays the offset value for each channel. This displays sum values as they are measured in accordance with the additional value configured for analog measured signals.
F	Unit	This displays the unit of measurement for each channel. The configured units are displayed on screen during measuring.
G	Sampling interval	Displays the signal sampling interval for analog measurements. Signals during analog measurements are sampled at the same interval as control module measurements, when "Synchronism" is selected.

Operating instructions

1		This enables you to select the input range for each channel.
2		Selecting this will return the “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel to their default settings. Item settings cannot be changed when the default settings are selected.
3		Selecting this enables you to change the settings of “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel.
4		Channel names can be entered as desired when “User settings” is selected.
5		The conversion rate value can be entered as desired when “User settings” is selected.
6		The offset value can be entered as desired when “User settings” is selected.
7		Units of measure can be entered as desired when “User settings” is selected.

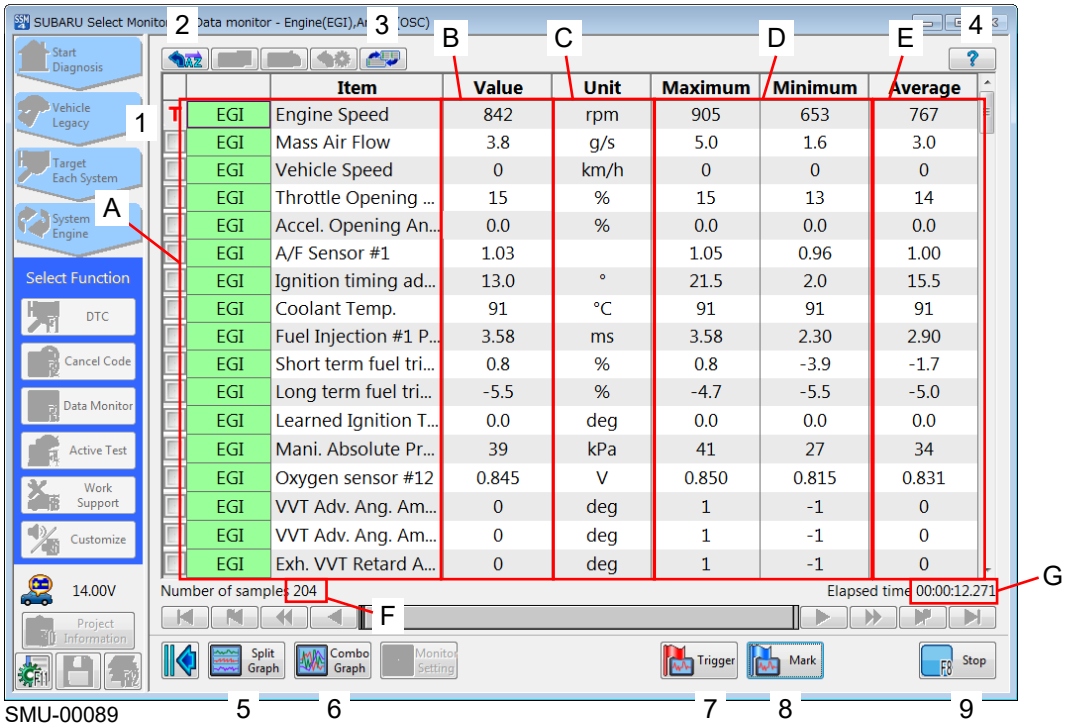
Notes

- If “analog setting” is grayed out and cannot be clicked, select “OSC” from “System name display area” on the signal selection screen, and add the analog measurement signal to the list of selected signals.
- All settings for analog measured signals (ch. 1-4) can be changed.
  Settings can be changed even when not selected on the select signal screen.

11-4. List display

After adding data monitor signals to the list of selected signals via the select signal screen, click “Confirmed” to display the list display screen and start measuring.

List display screen

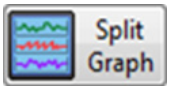
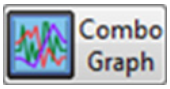
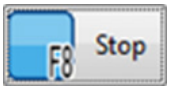


SMU-00089

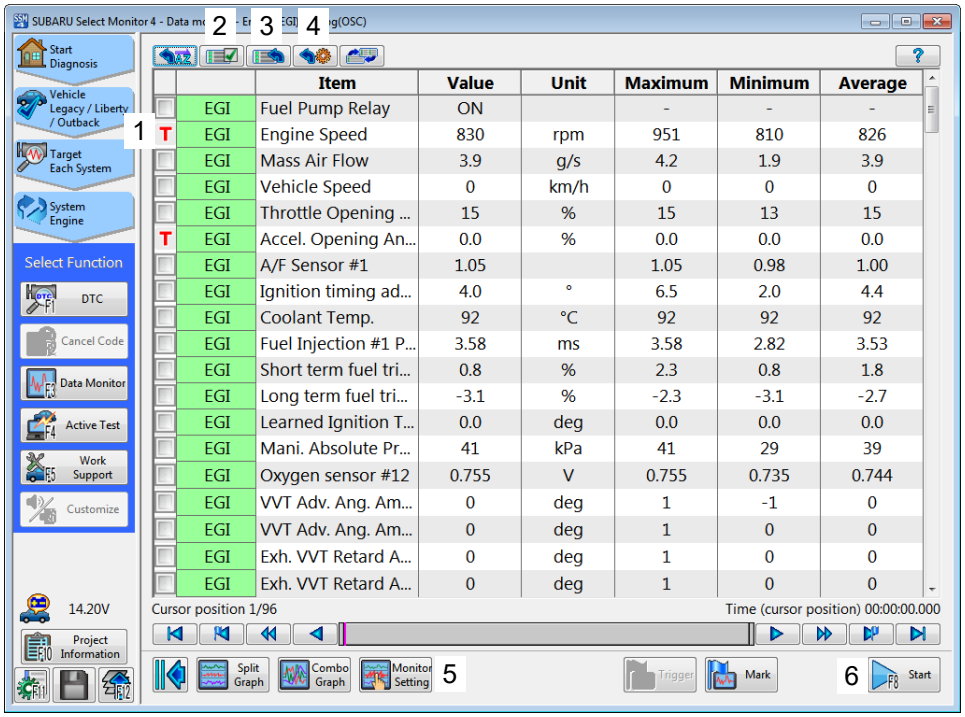
Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Maximum/Minimum	This displays the maximum/minimum values. The display updates when the maximum and minimum values change.
E	Average	This displays the average value over the time from the start of measuring to the current data point. The display updates when measured data is acquired.
F	Number of samples	This displays the number of samples currently acquired.
G	Elapsed time	This displays the elapsed time from the start of measuring.

Operating instructions

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
4		This displays usable keyboard operations for the displayed screen.
5		This displays the split graph display screen. Refer to “11-5. Split graph display” for more information.
6		This displays the combo graph display screen. Refer to “11-6. Combo graph display” for more information.
7		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
8		This adds a mark. You can also add the marking by pressing the numeric key or alphabetical key.
9		This stops measuring.

List display screen (while not measuring)



SMU-10040

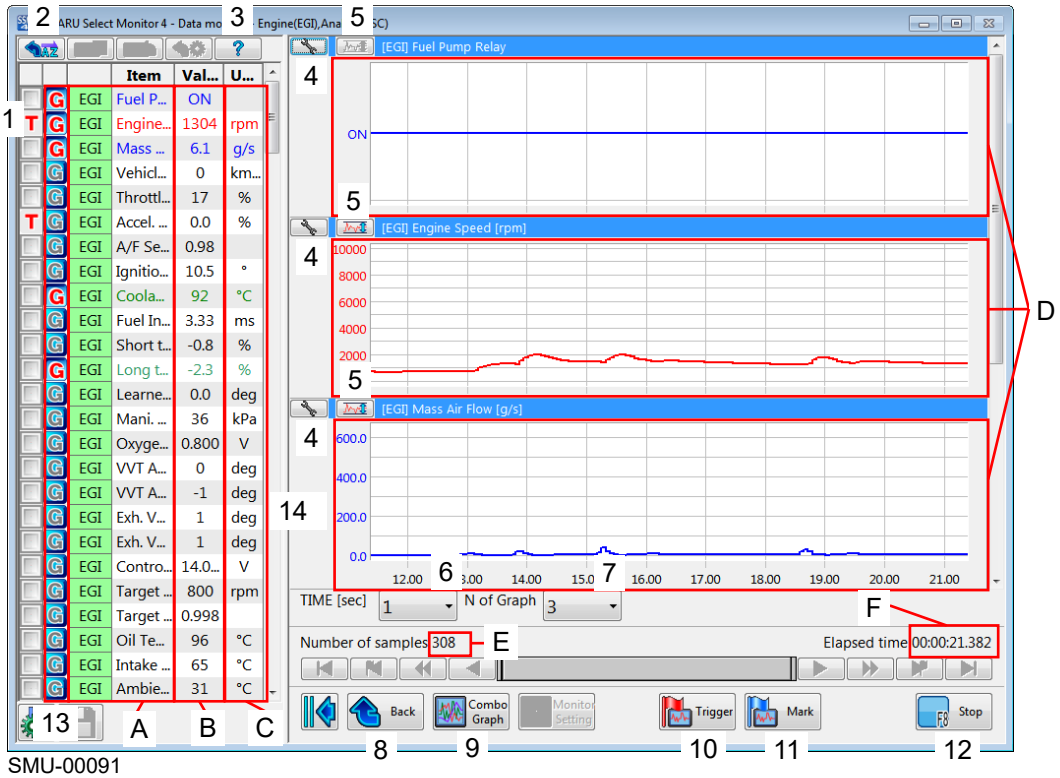
Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.

11-5. Split graph display

- Click either <7> "Split Graph" on the list display screen or <10> "Split Graph" on the combo graph display screen to display the split graph display screen.

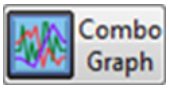
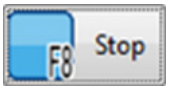
Split graph display screen



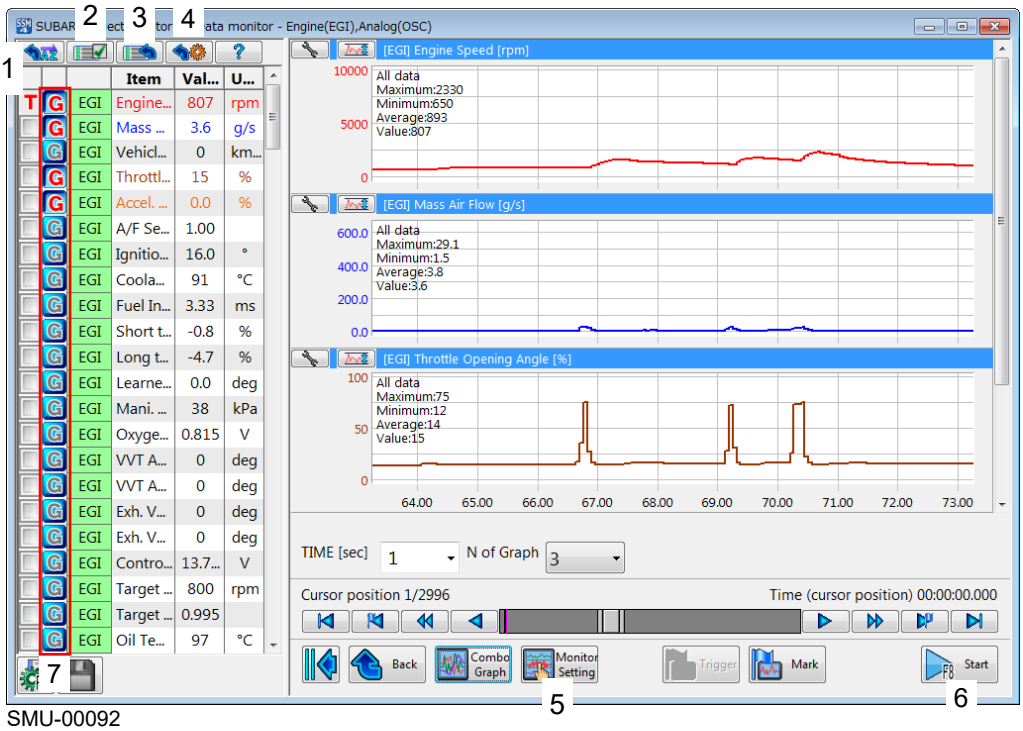
SMU-00091

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays signal graphs of the signals with display / not-display button pressed down for displayed items. Up to 150 signal graphs can be displayed. This enables you to change the display order by dragging and dropping the graph windows. This enables you to add the mark by clicking on the graph windows.
E	Number of samples	This displays the number of samples currently acquired.
F	Elapsed time	This displays the elapsed time from the start of measuring.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		This displays usable keyboard operations for the displayed screen.
4		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “11-7. Line graph settings” and “11-11. 2-cursor analysis” for more information.
5		This automatically configures the graph range. The applicable range can be configured with the “Graph settings”.
6		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
7		This configures the graph qty displayed together on one screen. This can set to a value between “1” and “7”.
8		This returns the display to the load data screen (List display).
9		This displays the combo graph display screen. Refer to “11-6. Combo graph display” for more information.
10		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
11		This adds a mark. This enables you to add the mark by clicking on the graph windows. You can also add the marking by pressing the numeric key or alphabetical key.
12		This stops measuring.
13		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.
14		This enables you to change the width of the item display area and graph display area by dragging the cursor to the right and left.

Split graph display screen (while not measuring)



SMU-00092

Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.
7		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

11-6. Combo graph display

- Click either <8> "Combo Graph" on the list display screen or <11> "Combo Graph" on the split graph display screen to display the combo graph display screen.

Combo graph display screen

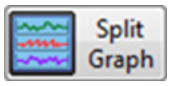
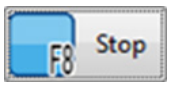
SMU-00093

Screen layout

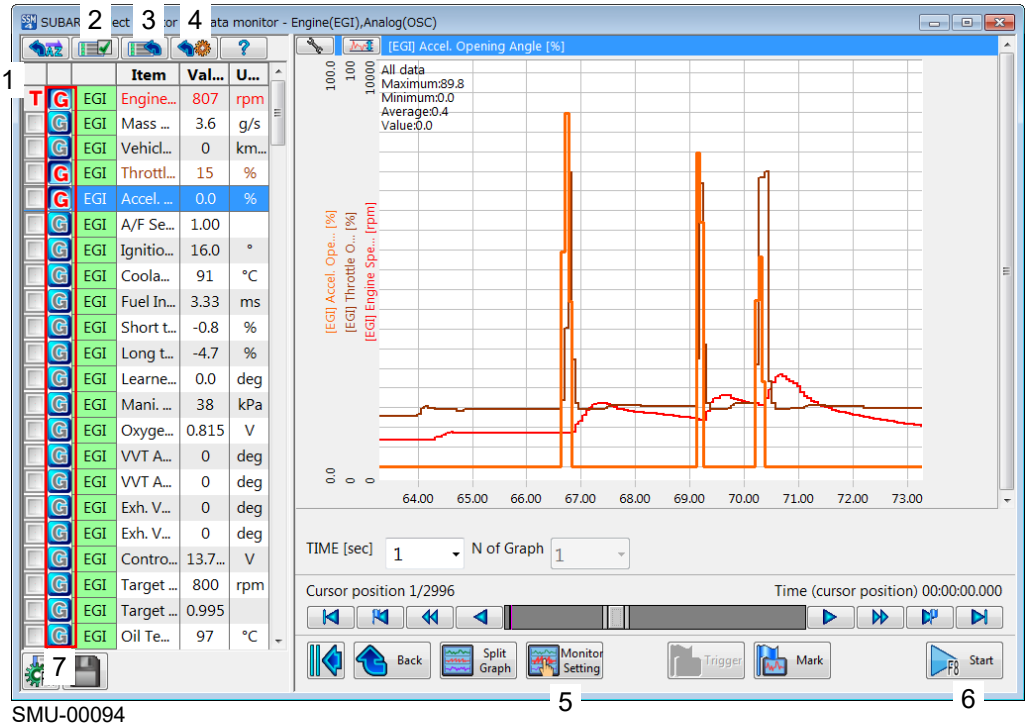
A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items. This enables you to add the mark by clicking on the graph windows.
E	Number of samples	This displays the number of samples currently acquired.
F	Elapsed time	This displays the elapsed time from the start of measuring.

Notes

- The graph qty cannot be selected.
  The graph qty automatically changes between 1 or 2 depending on the number of items.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		This displays usable keyboard operations for the displayed screen.
4		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “11-7. Line graph settings” and “11-11. 2-cursor analysis” for more information.
5		The graph range of items selected on the list display is automatically configured. The applicable range can be configured with the “Graph settings”.
6		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
7		This returns the display to the load data screen (List display).
8		This displays the split graph display screen. Refer to “11-5. Split graph display” for more information.
9		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
10		This adds a mark. This enables you to add the mark by clicking on the graph windows. You can also add the marking by pressing the numeric key or alphabetical key.
11		This stops measuring.
12		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.
13		This enables you to change the width of the item display area and graph display area by dragging the cursor to the right and left.

Combo graph Display screen (while not measuring)



SMU-00094

Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.
7		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

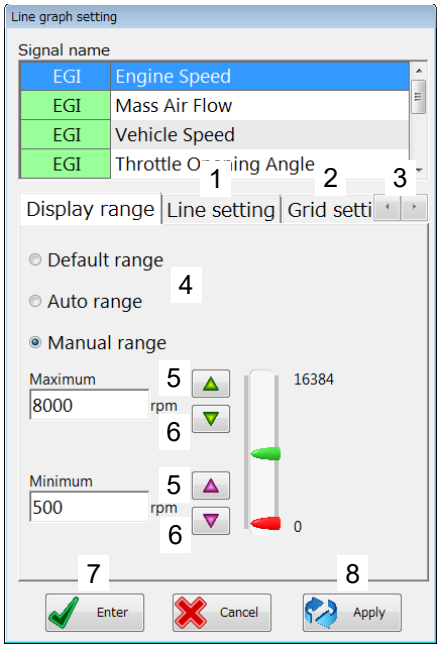
11-7. Line graph settings

- Click the - “Graph settings” on the split graph display screen or combo graph display screen to display the display range settings screen.

Notes

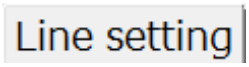
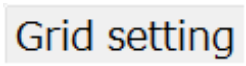
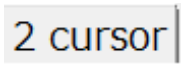
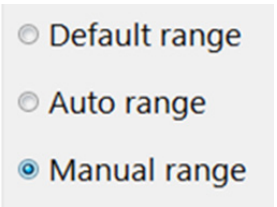
- This enables you to select signal names and configure each signal when changing the display from the combo graph display screen to the display range settings screen.

Display range settings screen



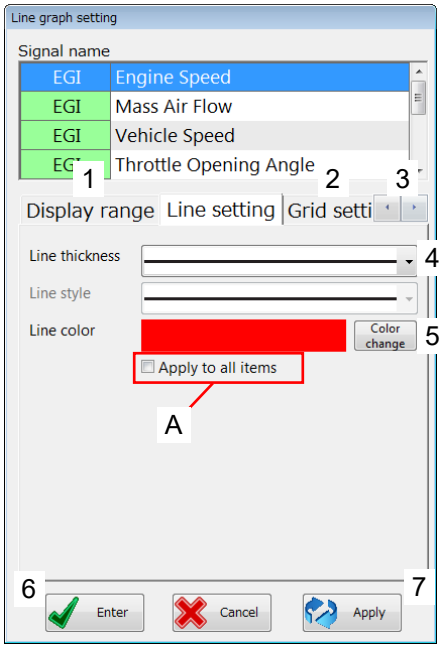
SMU-00095

Operating instructions

1		This displays the line settings screen.
2		Displays a grid setup screen.
3		Displays a 2-cursor setup screen.
4		This selects the method to configure the graph range. The default range for value axis (vertical axis) of the graph is configured to the specified value of each signal. Auto range automatically configures the value axis of the graph on the basis of measured signal values. Configure the maximum and minimum values as desired for manual ranges. This cannot be configured for certain signals. Values can also be directly entered into text boxes.
5		Raises the maximum and minimum values. This also enables you to adjust the value with the slider bar.
6		Lowers the maximum and minimum values. This also enables you to adjust the value with the slider bar.
7		This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.

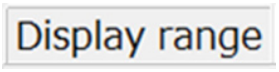
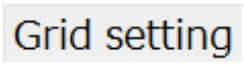
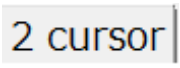
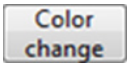
8		This confirms the changed settings.

Line settings screen

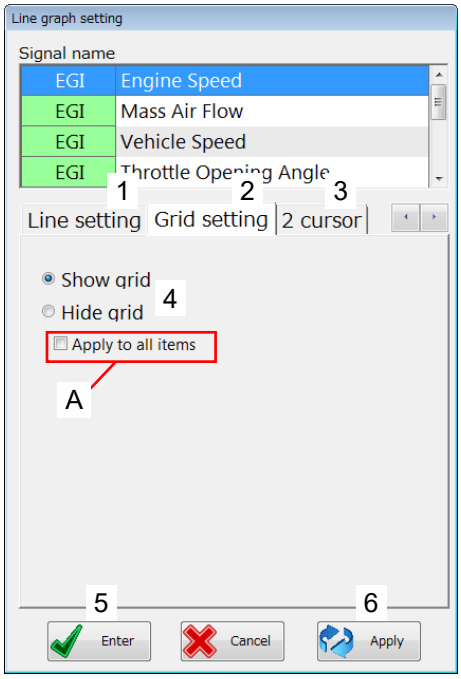


SMU-00096

Operating instructions

1		Displays a display range setup screen.
2		Displays a grid setup screen.
3		Displays a 2-cursor setup screen.
4		This changes the thickness and style of lines. Line styles can be selected only when the line width has been set to the thinnest option.
5		This changes the color of lines. Select the color from the color palette. If the <A> “Apply to all items” check box is selected, the selected line color applies to all signals.
6		This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
7		This confirms the changed settings.

Grid setup screen

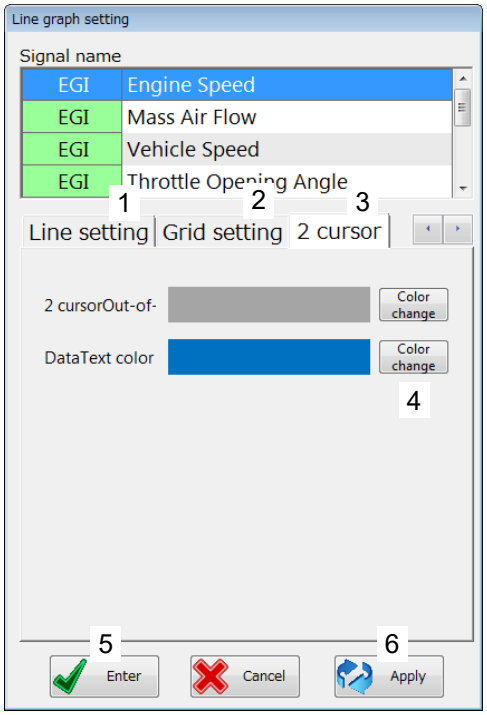


SMU-10042

Operating instructions

1	Display range	Displays a display range setup screen.
2	Line setting	Displays a line setup screen.
3	Grid setting	Displays a grid setup screen.
4	Show grid Hide grid	Sets whether to show or hide the grid on graph screens. Selected options are set for all signals when a checkmark is placed in the <A>"Apply to all signals" checkbox.
5	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
6	Application	This confirms the changed settings.

2-cursor setup screen



SMU-10043

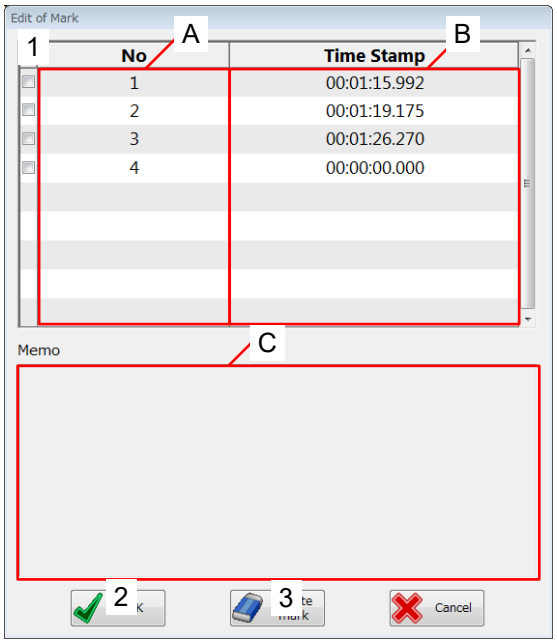
Operating instructions

1	Display range	Displays a display range setup screen.
2	Grid setting	Displays a grid setup screen.
3	2 cursor	Displays a 2-cursor setup screen.
4	Color change	This changes the color of lines. Select the color from the color palette. If the <A> “Apply to all items” check box is selected, the selected line color applies to all signals.
5	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
6	Application	This confirms the changed settings.

11-8. Edit of Mark

- Click "Edit of Mark" under on the Split graph display screen or Combo graph display screen to display the mark editing screen. Or, the mark editing screen is displayed by double-clicking the marked parts.

Mark editing screen

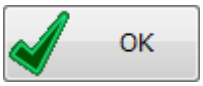


SMU-10034

Screen layout

A	No	This displays the mark number. The mark number is numbered in order of time when the mark is added.
B	Time Stamp	This displays the elapsed time from the start of measuring in the position where the mark is added.
C	Memo	This displays the memo input in the mark settings screen.

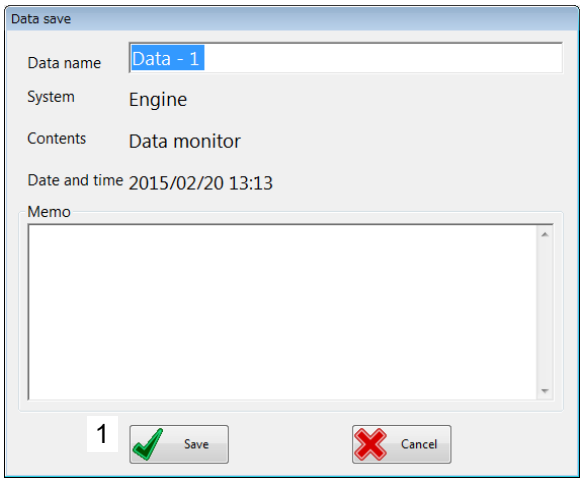
Operating instructions

1		Click to display the check box to select. Click again to deselect.
2		This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
3		This removes marks with selected check boxes.

11-9. Saving data

- Click the in the menu display area to display the data save screen.

Data save screen



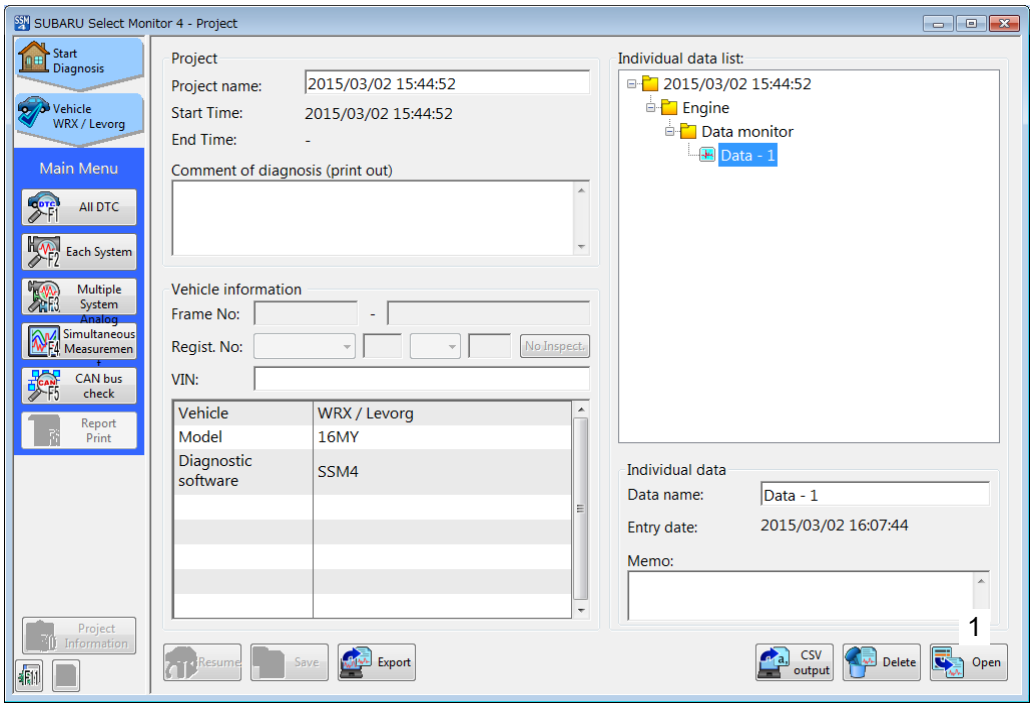
SMU-00097

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

11-10. Loading data

- Click “Project Information” in the menu display area to display the project screen during the diagnosis.

Project screen



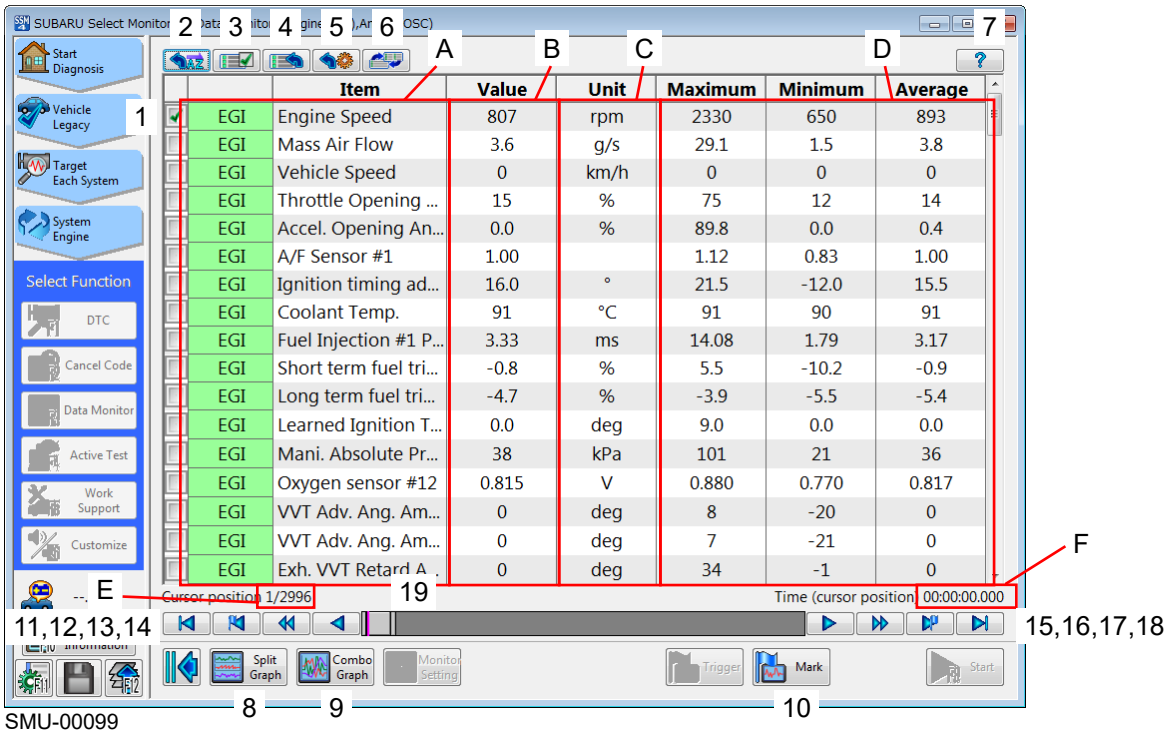
SMU-00098

- Double-click on the desired individual data monitor file from the individual data file list on the project screen or select the desired data and click <1> "Open" to display the load data screen.

Notes

- For the automatic saving data, “Auto save” is written in the memo field.
- The saved data monitor data is under the “Data monitor” in the individual data list.

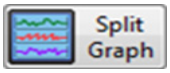
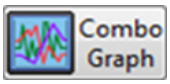
Load data screen (List display)



SMU-00099

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Maximum, minimum, average	This displays the maximum, minimum, and average values for all data.
E	Cursor position	This displays the current cursor position and total number of samples.
F	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

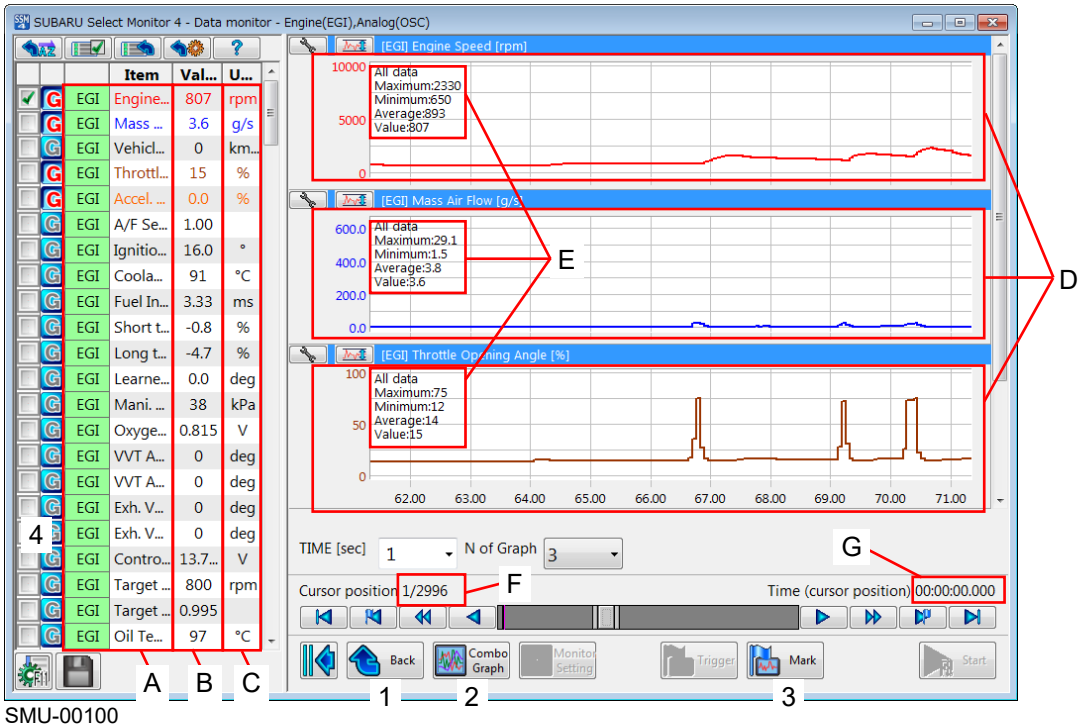
1		Click to display the check box to select. Click again to deselect.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Hides all items without a checkmark in the checkbox or trigger icon. Parameters not displayed are not removed from signal groups.
4		This displays all undisplayed items.
5		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
6		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
7		This displays usable keyboard operations for the displayed screen.
8		This displays the load data screen (Split graph display).
9		This displays the load data screen (Combo graph display).
10		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark.
11		This moves to the beginning of the scroll bar.
12		This moves to the next marked position on the left.
13		This moves the data position (sampling unit) one graduation to the right.
14		This moves data position (sampling unit) one data point to the left.
15		This moves data position (sampling unit) one data point to the right.
16		This moves the data position (sampling unit) one graduation to the right.
17		This moves to the next marked position on the right.
18		This moves to the end of the scroll bar.
19		This enables you to adjust the amount of time (width) displayed on one graph display screen by stretching the end of the scroll bar as desired. The display does not change when stretching the scroll bar on the list display screen.

Notes

- Starting and stopping measuring as well as starting triggering cannot be performed on the load data screen.

- Click either <7> “Split Graph” on the load data screen (List display) or <10> “Split Graph” on the load data screen (Combo graph display) to display the load data screen (Split graph display).

load data screen (Split graph display)

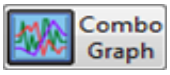


SMU-00100

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays all signal graphs for displayed items. This enables you to change the display order by dragging and dropping the graph windows.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

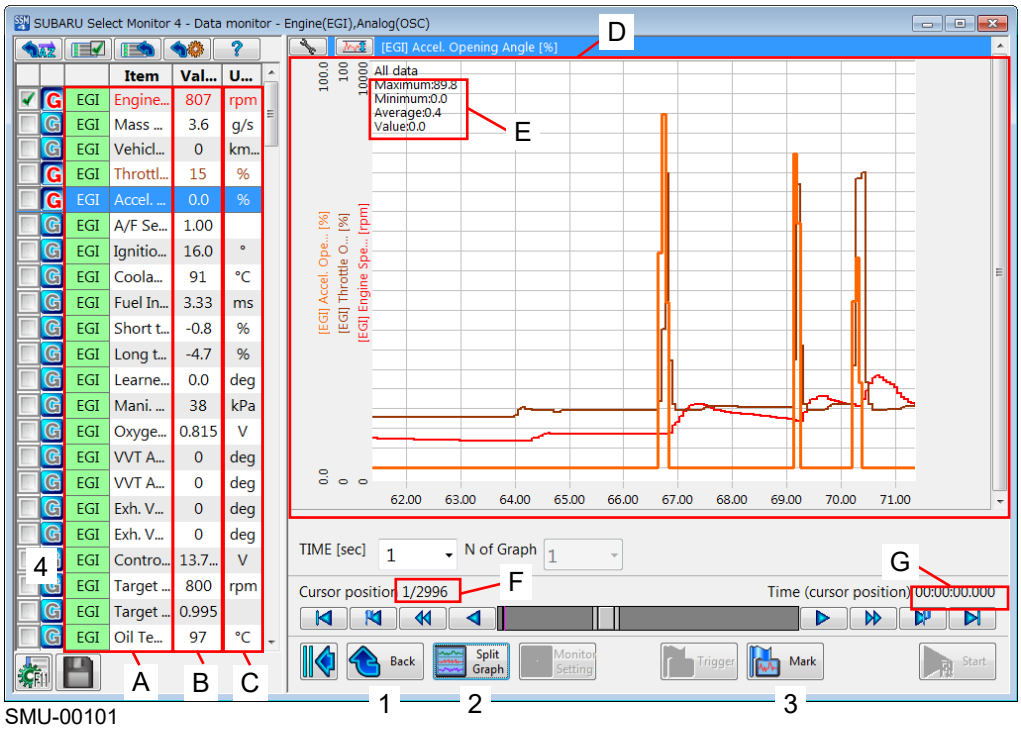
Operating instructions

1		This returns the display to the load data screen (List display).
2		This displays the load data screen (Combo graph display). Refer to “11-6. Combo graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark. Marks can be edited by double-clicking the parts where the mark is located. For a detailed explanation, see “11-8. Edit of Mark”.

4		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

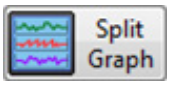
- Click either <8> “Combo Graph” on the load data screen (List display) or <11> “Combo Graph” on the load data screen (Split graph display) to display the load data screen (Combo graph display).

Load data screen(Combo graph display)



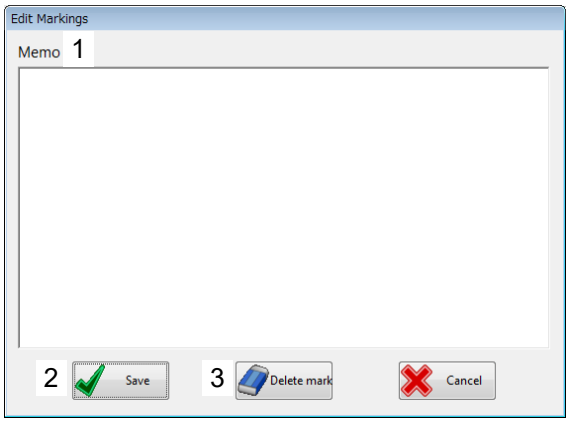
Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

1		This returns the display to the load data screen (List display).
2		This displays the load data screen (Split graph display). Refer to “11-5. Split graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark. Marks can be edited by double-clicking the parts where the mark is located. For a detailed explanation, see “11-8. Edit of Mark”.
4		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

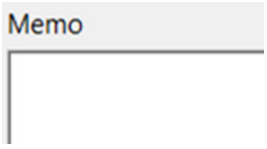
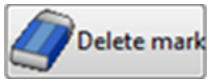
- Click “Mark” on the load data screen to display the mark settings screen.

Mark settings screen



SMU-00102

Operating instructions

1		This enables you to enter notes to marked positions.
2		This saves mark information. This creates a new mark if the position is not currently marked. If the position is currently marked, the note information is overwritten.
3		This deletes the mark. The operation of this button is only effective when “Mark” is clicked at a marked position.

Notes

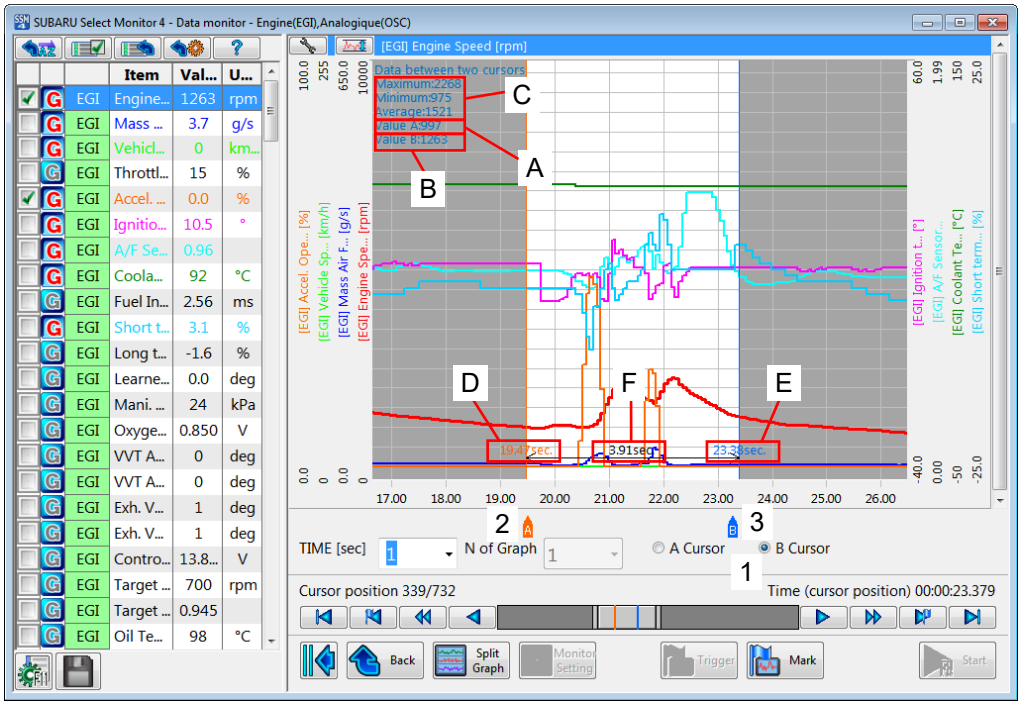
- The confirm data overwrite screen displays if you try to close the data monitor without saving after changes were made to the display state.

11-11. 2-cursor analysis

2-cursor analysis enables you to add the values of any two points of measured data and the maximum, minimum, and average values between these two points.

- Click the - “2-cursor analysis” on the split graph display screen or combo graph display screen to display the 2-cursor analysis screen.

2-cursor analysis screen



SMU-00103

Screen layout

A	Value A: *	This displays the signal value at the A cursor position.
B	Value B: *	This displays the signal value at the B cursor position.
C	Maximum:* Minimum:* Average:*	This displays the maximum, minimum, and average values between the two cursor positions.
D	*.** sec. (red characters)	This displays the time for the A cursor position.
E	*.** sec. (blue characters)	This displays the time for the B cursor position.
F	*.** sec. (black characters)	This displays the difference in time between the two cursor positions.

Operating instructions

1	A Cursor B Cursor	This switches over the selection of the main cursor. This displays the signal value or information on cursor positions according to the position of the selected main cursor.
2		Drag the icon to move the position of cursor A.
3		Drag the icon to move the position of cursor B.

11-11-1. Data Cut-and-Save

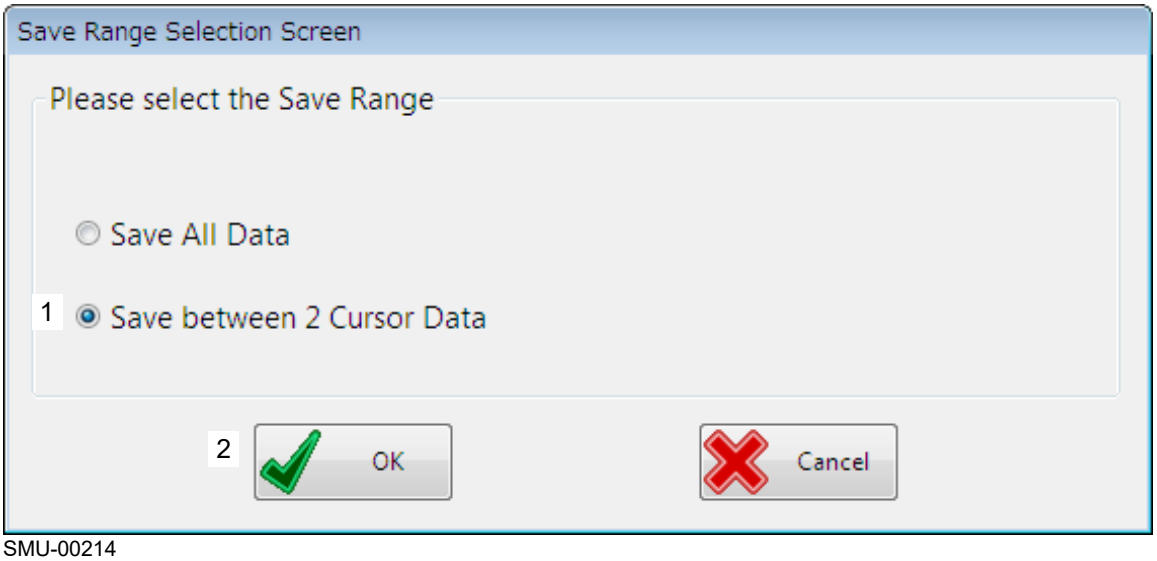
Data cut-and-save can be used in the digital data screen, and either of the Split graph display screen or Combo graph display screen. (The following explanation is for the Combo graph display screen.)

2-cursor analysis screen

SMU-00213

- Click on <1> at the bottom left of the 2 cursor analysis screen. Save Range Selection Screen is displayed.

Save range selection screen



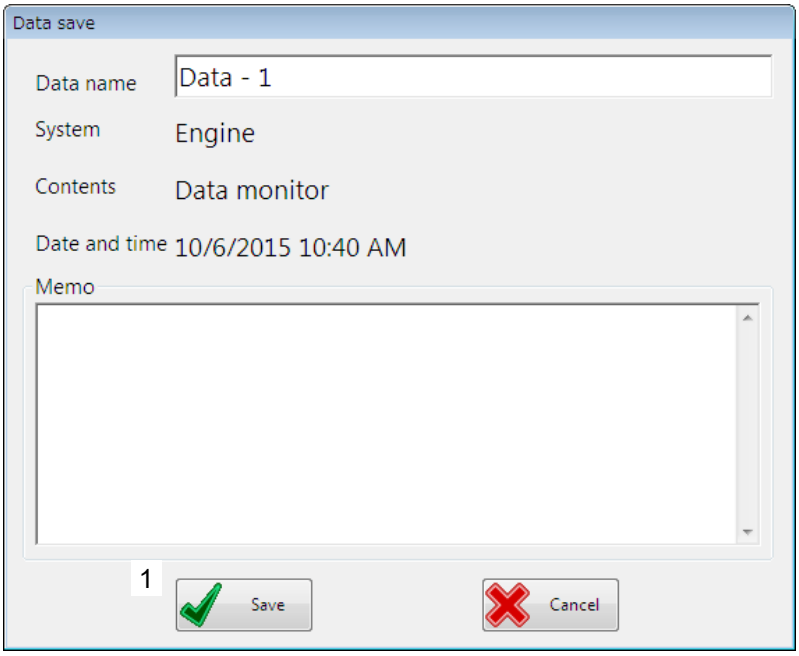
SMU-00214

- Please put the check in the <1> "Save between 2 cursor Data " in save range selection screen. When you click <2> "OK", the Data Save Screen is displayed.

Notes

- If you select “Save All data” at this time, cut-and save will not be performed, and all sampled data will be saved.

Data save screen



SMU-00215

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

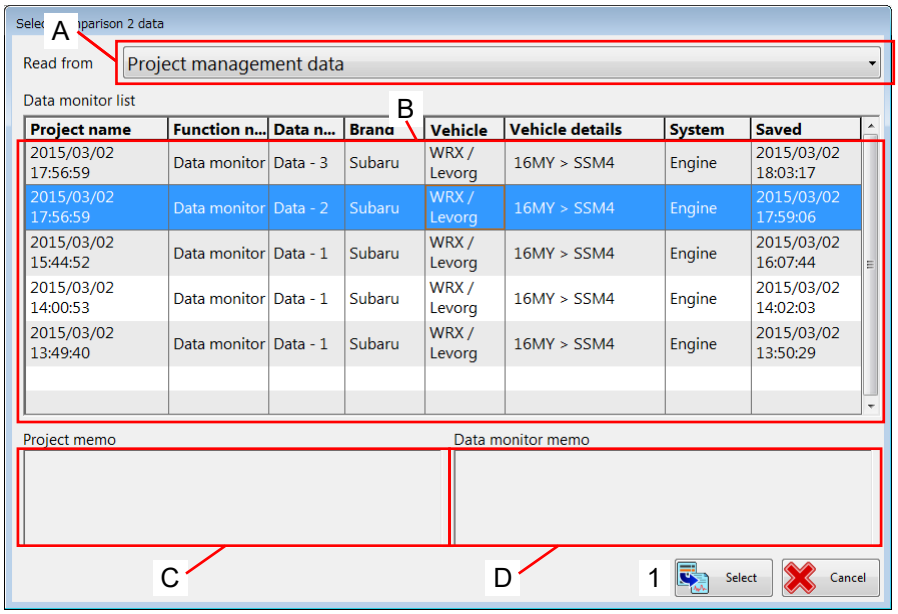
Notes

- If you want to save only the trimmed data as a file, please save by selecting only the relevant data in the export of the project screen.

11-12. Data comparison

- From the button, click “Function” and then “Data comparison” to display the select second type of data for comparison screen.

Select second type of data for comparison screen



SMU-00104

Screen layout

A	Read from	This is a pull-down menu for selecting the project to load.
B	Data monitor list	This displays a list of projects stored in the particular folder and that contain comparable individual data (measured data from the data monitor). All individual data in the project are displayed when there are multiple individual data files that can be compared in the same project name.
C	Project memo	This field displays entered notes such as supplementary information on projects. Nothing is displayed if no memo have been entered.
D	Data monitor memo	This field displays entered notes such as supplementary information on individual data. Nothing is displayed if no memo have been entered.

- After selecting individual data from the <B> data monitor list, click <1> “Select” to display the data comparison screen.

Data comparison screen

SMU-00105

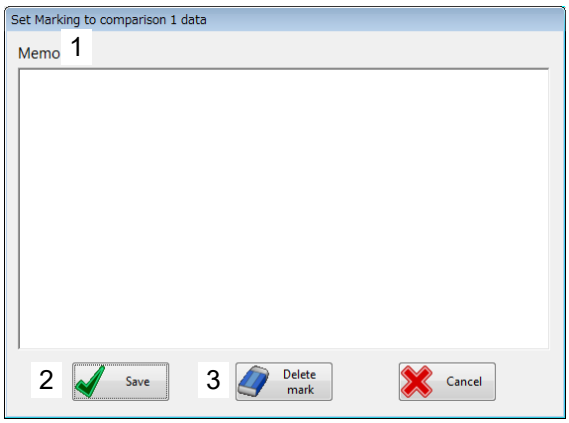
Screen layout

A	List display	This displays the items of which the data monitor item names match between the playback data and comparison data. “-” is displayed when the parameter is not present in either set of data.
B	Playback data	This displays a graph of the playback data.
C	Comparison data	This displays a graph of the comparison data.
D	Cursor position	This displays the current cursor position and total number of samples.
E	Elapsed time	This displays the elapsed time from the start of measuring to the current cursor position.

1		The graph range of items selected on the list display is automatically configured.
2		This returns to the screen before executing “Data comparison”.
3		This adds a mark to the playback data graph. Click this at the marked position to add or change notes for the mark or delete the mark. The mark and line is displayed in blue. A mark setup screen for the comparative data graph appears after setting the mark, when a checkmark is placed in the "Synchronism" checkbox.
4		This adds a mark to the comparison data graph. Click this at the marked position to add or change notes for the mark or delete the mark. The mark and line is displayed in green. A mark setup screen for the recreated data graph appears after setting the mark, when a checkmark is placed in the "Synchronism" checkbox.
5		When this check box is selected, the cursor movement, scroll bar width and scroll bar movement of the playback data and comparison data are synchronized.
6		This moves to the beginning of the scroll bar. (playback data)
7		This moves to the next marked position on the left. (playback data)
8		This moves the data position (sampling unit) one graduation to the left. (playback data)
9		This moves data position (sampling unit) one data point to the left. (playback data)
10		This moves data position (sampling unit) one data point to the right. (playback data)
11		This moves the data position (sampling unit) one graduation to the right. (playback data)
12		This moves to the next marked position on the right. (playback data)
13		This moves to the end of the scroll bar. (playback data)
14		This moves to the beginning of the scroll bar. (comparison data)
15		This moves to the next marked position on the left. (comparison data)
16		This moves the data position (sampling unit) one graduation to the left. (comparison data)
17		This moves data position (sampling unit) one data point to the left. (comparison data)
18		This moves data position (sampling unit) one data point to the right. (comparison data)
19		This moves the data position (sampling unit) one graduation to the right. (comparison data)
20		This moves to the next marked position on the right. (comparison data)
21		This moves to the end of the scroll bar. (comparison data)
22		This enables you to adjust the amount of time (width) displayed on one graph display screen by stretching the end of the scroll bar as desired.

- Click "Mark (Comp1)" or "Mark (Comp2)" on the comparison data screen to display the mark settings screen.

Mark settings screen



SMU-00106

Operating instructions

1	Memo	This enables you to enter notes to marked positions.
2	Save	This saves mark information. This creates a new mark if the position is not currently marked. If the position is currently marked, the note information is overwritten.
3	Delete mark	This deletes the mark. The operation of this button is only effective when “Mark” is clicked at a marked position.

Notes

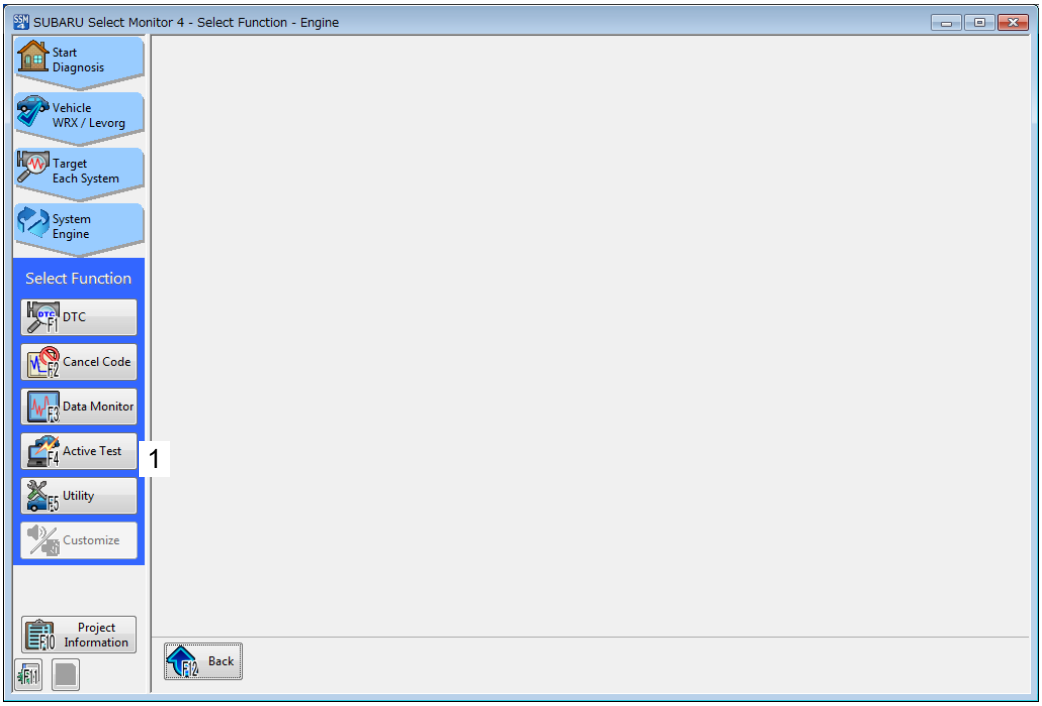
- The confirm data overwrite screen displays if you try to close the data monitor without saving after changes were made to the display state.

12. Active test

This enables you to manually drive the actuator to check operation in control systems that are compatible with SSM4 and support the active test function.

This enables you to run the active test while also running the data monitor.

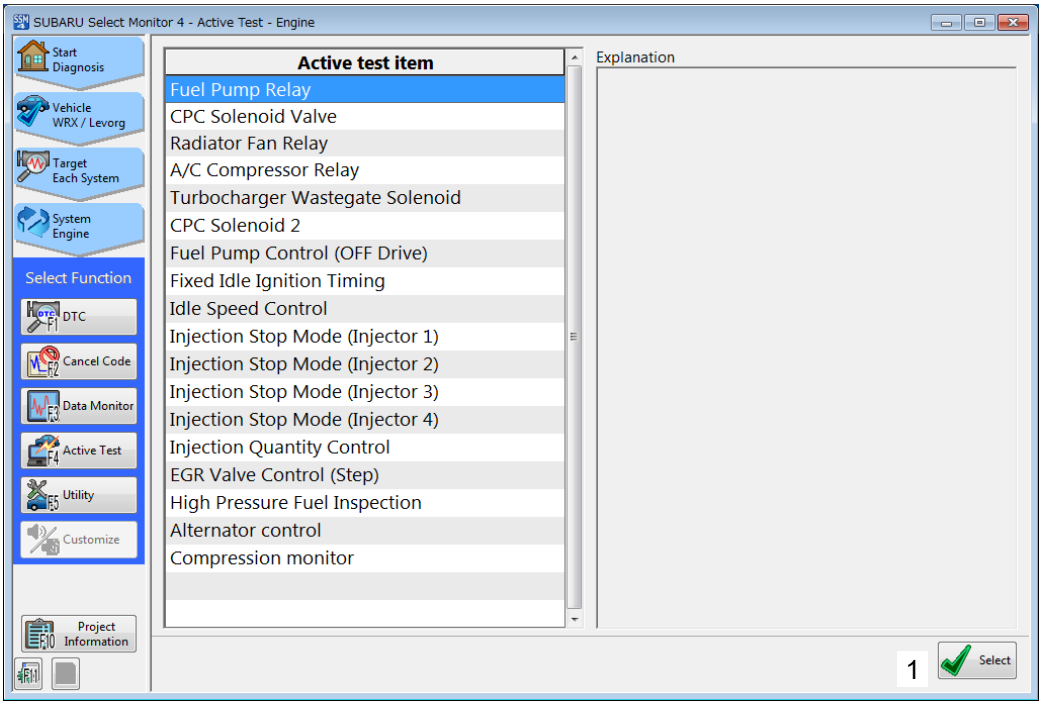
Select function screen



SMU-00107

- Click <1> “Active Test” on the select function screen to display the item selection screen.

Item selection screen



SMU-00108

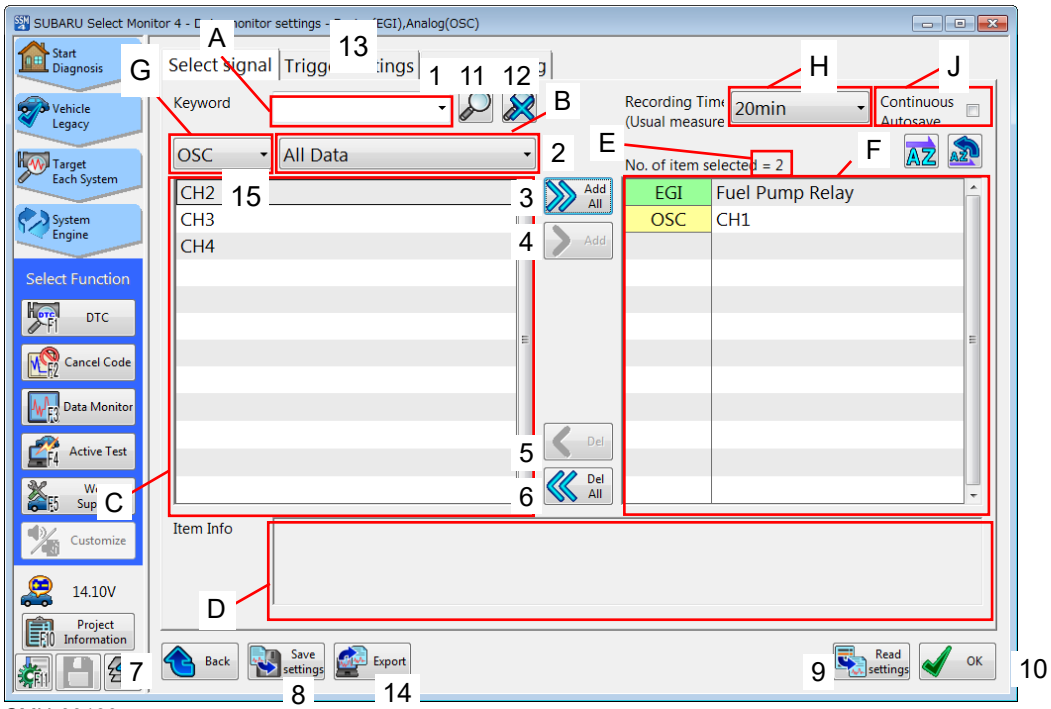
Notes

- “Active test item” differ depending on the system and selected vehicle.
- Detailed information on the selected report is displayed in the description.
  Detailed information may not be displayed depending on the selected item.

12-1. Select signals

After selecting an item from the item selection screen, click <1> "Select" to display the select signal screen.

Select signal screen



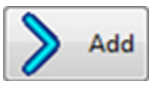
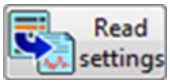
SMU-00109

Screen layout

A	Keyword	This field is where keywords used to filter signals are entered. This enables you to select previously entered keywords from the pull-down menu.
B	Signal group	This is a pull-down menu used to select signal groups.
C	List of selectable signals	This displays measurable signals by the system during diagnostics. The signals displayed differ depending on the selected signal group.
D	Item Info	This displays information on signals selected from the list of selectable signals. Item information may not be displayed depending on the selected signal.
E	No. of item selected	This displays the number of signal items displayed in the list of selected signals.
F	List of selected signals	This displays the signals selected from the list of selectable signals.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.
H	REC Time (Normal)	This pull-down menu is for setting the maximum logging time allowed per data monitoring measurement.
J	Continuous Autosave	By placing a checkmark in the checkbox, data is repeatedly and automatically saved and remeasured during the set maximum logging time. Enable this option to log monitored data beyond the maximum logging time.

Operating instructions

1		This is used to filter the display of signals containing keywords. Enter a keyword or select one from the pull-down menu and then click <11> to filter signals. Click <12> to remove the filter.

2		Signals registered in signal groups selected from the pull-down menu are displayed in the list of selectable signals. Selecting “All Data” displays all signals.
3		This adds measurable signals to the list of selected signals. The insufficient signal against the upper limit 150 of the number of signals should be added.
4		This adds selected signals to the list of selected signals. Multiple signals can be selected at the same time. The upper limit of the number of signals which can be added is 150.
5		This deletes selected signals to the list of selected signals. Multiple signals can be selected at the same time.
6		This removes signals from the list of selected signals.
7		This returns to the item selection screen.
8		This saves the data monitor settings. This saves signal selections and trigger settings.
9		This loads saved data monitor settings.
10		This displays the data monitor screen.
13		Exports data monitoring settings as a file.
15		Signals registered under the system name selected from the pull-down menu are displayed in the “List of selectable signals”. Selecting “OSC” displays the channel for analog measurement.

Notes

- This enables you to run the active test independently without running the data monitor by clicking <10> “Confirmed” without adding signals to the list of selected signals.
- The signals displayed in the list of selectable signals when “All Data” is selected differ depending on the system used and the vehicle for which the data monitor is performed.
- Signal groups first registered for each system differ depending on the system and the vehicle for which the data monitor is performed.
- When “Custom list” displayed in the signal group pull-down menu is selected, the most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the list of selected signals.
- The most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the area displaying the list of selected signals.
- When performing the active test for the first time after installing SSM4, all signal names are displayed in the area that displays the list of selected signals. This cannot be changed.
  Measured signal names can be changed after loading the configuration file. Measured signals can be changed after the second time.

12-2. Trigger settings

This enables you to configure trigger detection conditions to apply triggers to automatically respond to measured signal values.

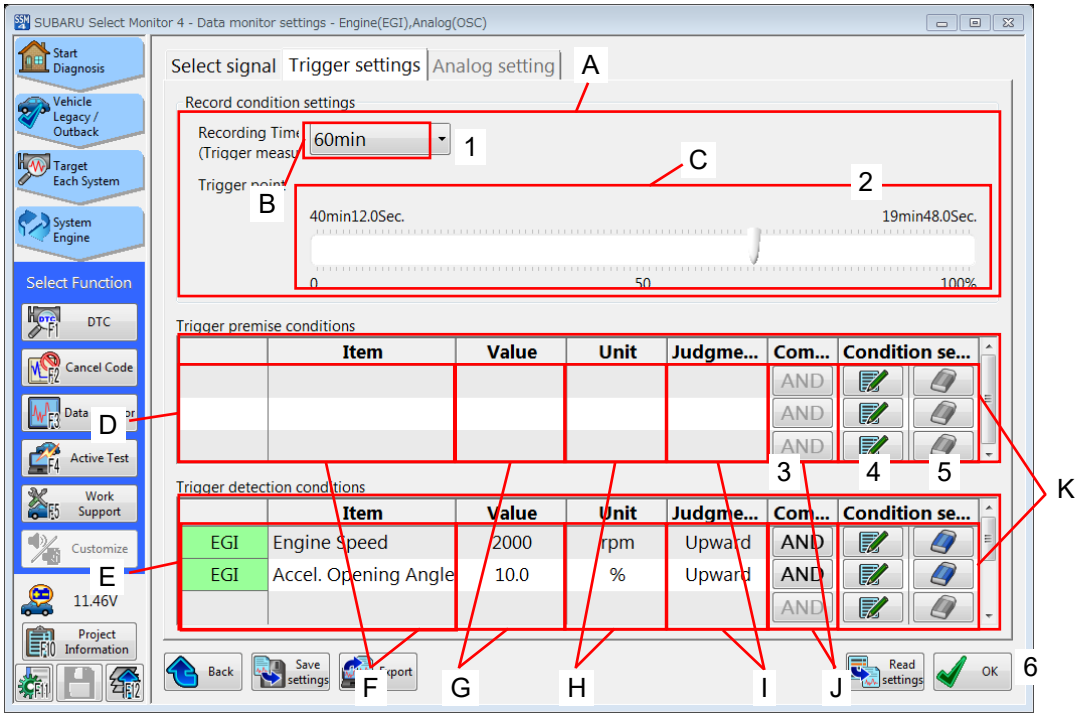
This enables you to configure different conditions for different signals and also configure conditional combinations.

- Click the <13> “Trigger settings” tab on the select signal screen to display the trigger settings screen.

Notes

- Configuring trigger detection conditions is not required to run the active test.
  In this case, click <10> “Confirmed” after selecting a signal on the select signal screen.

Trigger settings screen

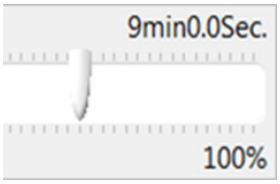


SMU-10029

Screen layout

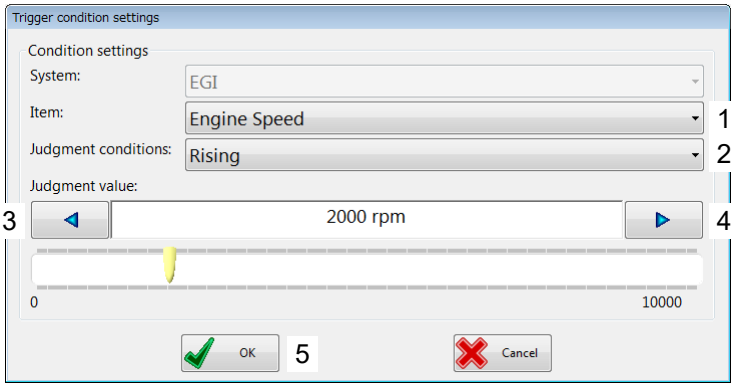
A	Record condition settings	This displays the configured recording conditions.
B	REC Time (Trigger)	This displays the data monitor record time.
C	Trigger point	This displays the trigger point. This displays the amount of record time before and after the timing of triggers. The position of the knob on the slider bar represents the trigger point.
D	Trigger premise conditions	This displays the trigger premise conditions. Triggers do not activate when only the detection conditions are satisfied when preconditions are configured. The preconditions must first be satisfied and then the detection conditions must be satisfied.
E	Trigger detection conditions	This displays the trigger detection conditions.
F	Item	This displays the name of signals for which conditions are configured.
G	Value	This displays the value functioning as the trigger condition.
H	Unit	This displays the unit of measure for each item.
I	Judgment conditions	This displays the judgment conditions for each item.
J	Combination	This displays the button to select the type of conditional combinations.
K	Condition setting	This displays buttons for condition settings.

Operating instructions

1		This changes the record time.
2		Move the slider bar knob to change the trigger point. This enables you to setup an estimated value in percentages displayed under the slider bar.
3		This sets the type of conditional combinations. Click to change between “AND” and “OR”.
4		This displays the configure trigger conditions screen. This enables you to configure trigger conditions for each signal.
5		This deletes trigger conditions for each signal.
6		This displays the data monitor screen.

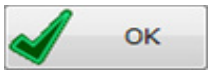
- Click the <4> on the trigger settings screen to display the configure trigger conditions screen.

Configure trigger conditions screen



SMU-00111

Operating instructions

1		This selects the name of signals for which trigger conditions are configured.
2		This changes the judgment conditions.
3		This lowers the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
4		This raises the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
5		This returns the display to the trigger settings screen.

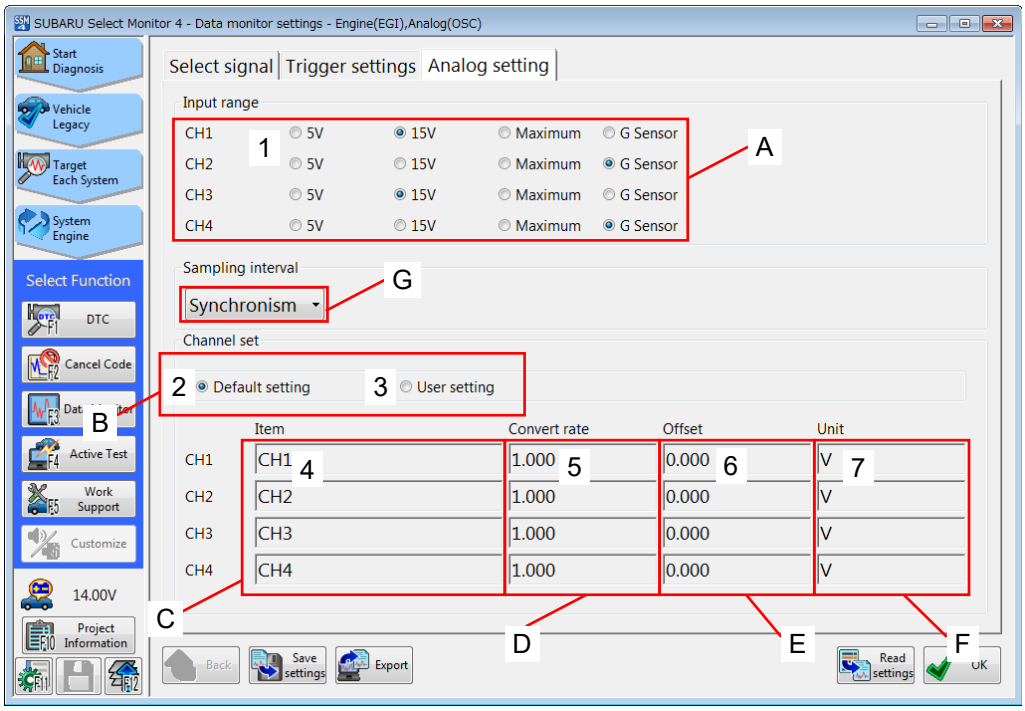
12-3. Analog settings

The analog settings includes input range and channel settings.

This also enables you to save configuration data and load saved configuration files.

- Click the <2> "Analog settings" tab on the select signal screen or the <1> "Analog settings" tab on the trigger settings screen to display the analog settings screen.

Analog settings screen



SMU-10041

Screen layout

A	Input range	This displays the input range for each channel. The input range is selected by clicking the radio button to the left of each item. The following ranges are available for each item. • 5 V: -5 V to +5 V • 15 V: -15 V to +15 V • Maximum: -150 V to +150 V • G sensor: -5V to +5V • When measuring the G sensor output with the optional switch box cable, select a “G sensor”. If "G Sensor" is selected, the numeric values for physical quantity (unit: G) conversion are automatically entered in "Convert rate", "Offset" and "Unit”, to indicate the physical quantities (unit: G). The numeric values for physical quantity (unit: G) conversion are as follows. Convert rate : 1.515 Offset : -2.5 Unit : G The output destination channel of each G sensor is as follows. CH2: X-axis output CH3: Y-axis output CH4: Z-axis output Do not select the G sensor for CH1 because the switch box cable cannot physically connect to it.
B	Channel set	This displays the status of channel settings. The channel setting method is selected by clicking the radio button to the left of each item.
C	Item	This displays the channel name of each channel. This enables you to change this as desired.
D	Conversion rate	This displays the conversion rate for each channel. This displays values as they are measured in accordance with the multiplier configured for analog measured signal values.

E	Offset	This displays the offset value for each channel. This displays sum values as they are measured in accordance with the additional value configured for analog measured signals.
F	Unit	This displays the unit of measurement for each channel. The configured units are displayed on screen during measuring.
G	Sampling interval	Displays the signal sampling interval for analog measurements. Signals during analog measurements are sampled at the same interval as control module measurements, when "Synchronism" is selected.

1		This enables you to select the input range for each channel.
2		Selecting this will return the “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel to their default settings. Item settings cannot be changed when the default settings are selected.
3		Selecting this enables you to change the settings of “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel.
4		Channel names can be entered as desired when “User settings” is selected.
5		The conversion rate value can be entered as desired when “User settings” is selected.
6		The offset value can be entered as desired when “User settings” is selected.
7		Units of measure can be entered as desired when “User settings” is selected.

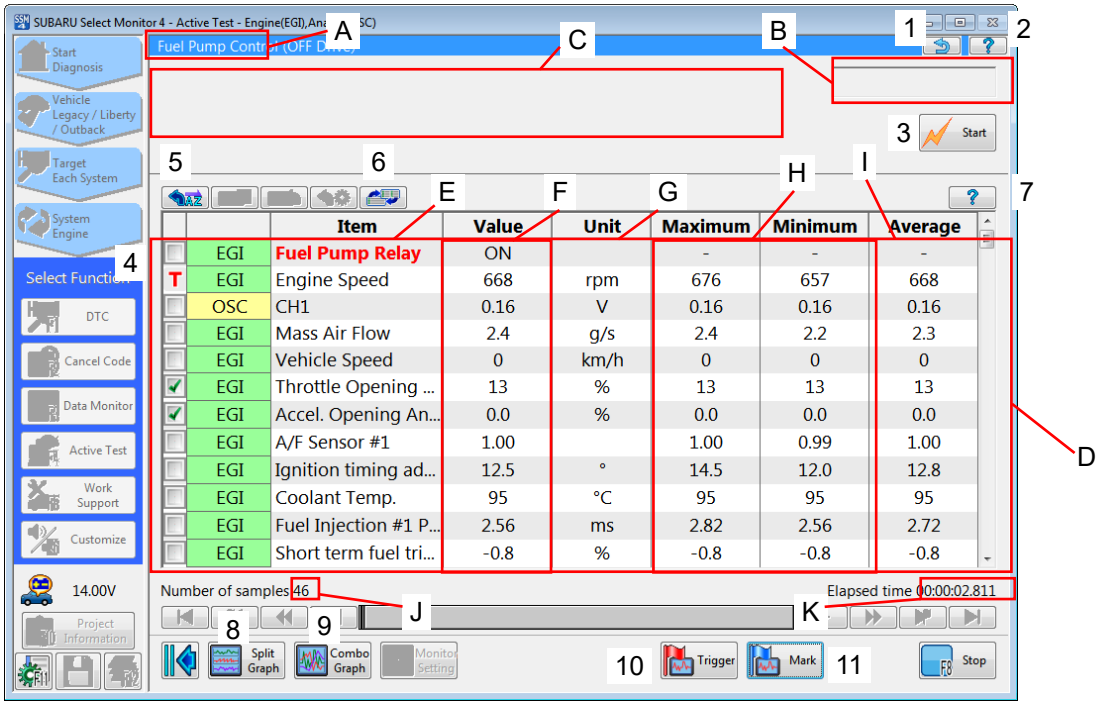
Notes

- If “analog setting” is grayed out and cannot be clicked, select “OSC” from “System name display area” on the signal selection screen, and add the analog measurement signal to the list of selected signals.
- All settings for analog measured signals (ch. 1-4) can be changed.
  Settings can be changed even when not selected on the select signal screen.

12-4. List display

After adding data monitor signals to the list of selected signals via the select signal screen, click "Confirmed" to display the run active test screen and start measuring.

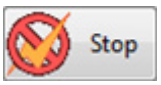
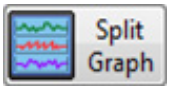
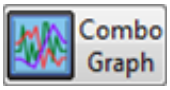
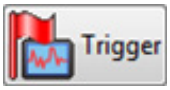
Run active test screen (List display screen)



SMU-00112

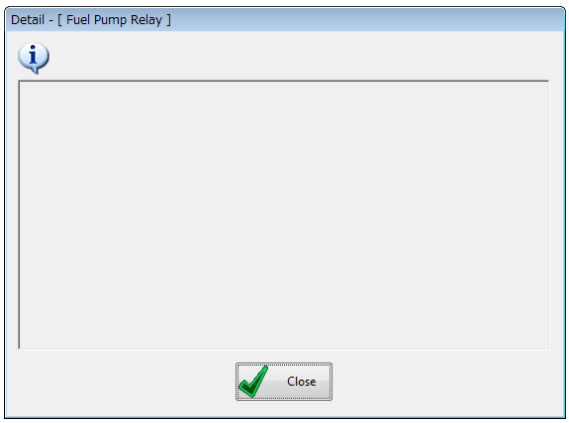
Screen layout

A	Active test item	This displays the names of active test items.
B	Start status	This displays the drive state (“Start” or “Stop”) of the actuator.
C	Operation panel	This displays the active test operation panel. The operation panel displayed differs depending on the selected item.
D	List display	This displays the data monitor details. The display details are the same as the display for the data monitor function.
E	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
F	Value	This displays the signal value.
G	Unit	This displays the unit of measure for each item.
H	Maximum/Minimum	This displays the maximum/minimum values. The display updates when the maximum and minimum values change.
I	Average	This displays the average value over the time from the start of measuring to the current data point. The display updates when measured data is acquired.
J	Number of samples	This displays the number of samples currently acquired.
K	Elapsed time	This displays the elapsed time from the start of measuring.

1		This resets the operation panel settings.
2		This displays detailed information for the selected active test items.
3	 	This starts and stops the active test. “Start” is displayed when the active test is not running. “Stop” is displayed when the active test is running. This icon may be inoperable or may not display depending on the selected active test items.
4		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
5		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
6		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
7		This displays usable keyboard operations for the displayed screen.
8		This displays the split graph display screen. Refer to “12-5. Split graph display” for more information.
9		This displays the combo graph display screen. Refer to “12-6. Combo graph display” for more information.
10		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
11		This adds a mark. You can also add the marking by pressing the numeric key or alphabetical key.

- Click <2> on the run active test screen to display the detailed information screen.

Detailed information screen



SMU-00113

Notes

- Detailed information may not display on the detailed information screen depending on the active test items.

Caution

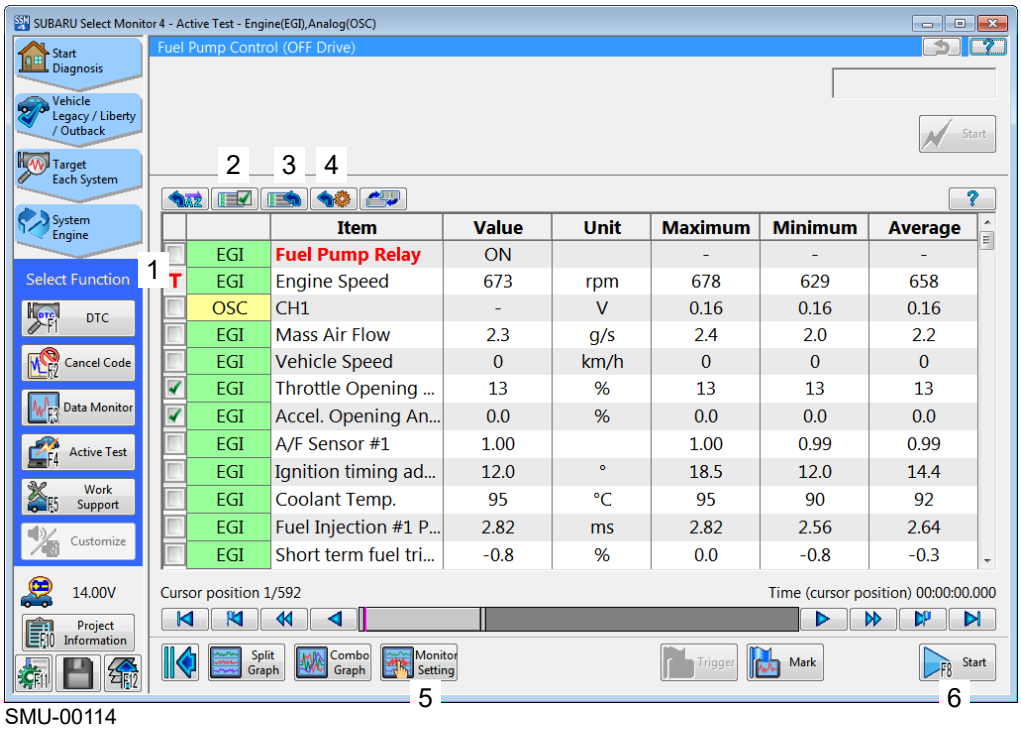
- Make sure to perform your work in accordance with the precautions while referencing the detailed information when detailed information is displayed on the detailed information screen while running the active test.
- The active test includes potentially dangerous items. Perform your work while referencing the maintenance manuals.
- Use wheel stoppers to prevent the wheels from moving before you begin work.
- Run the active test in safe location.
- Make sure there are no other people in the surrounding area before starting.

Important

- The active test manually drives the actuator in a different way from normal operation. Do not run the active test for extended periods of time or run the test repeatedly.
  This may result in a vehicle accident.

- Click <3> “Start” on the run active test screen to start driving the active test item.
- Use the operation panel to run the active test.

Run active test screen (while not measuring)



SMU-00114

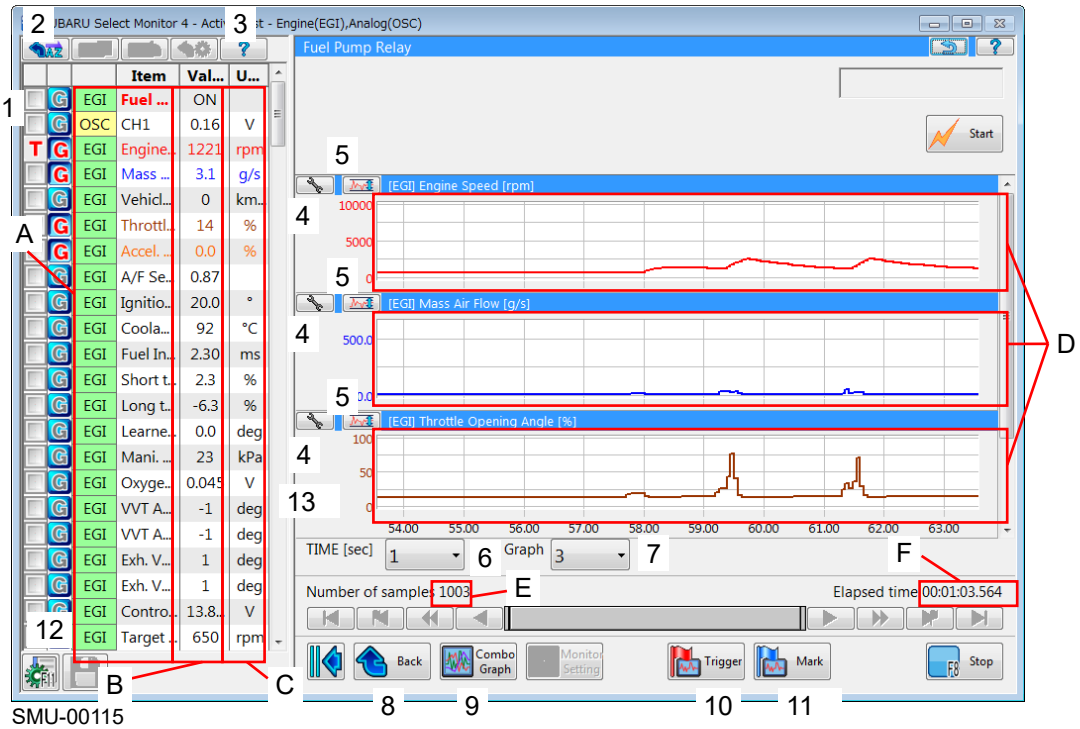
Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.

12-5. Split graph display

- Click either <10> "Split Graph" on the list display screen or <10> "Split Graph" on the combo graph display screen to display the split graph display screen.

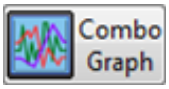
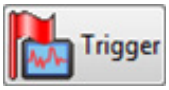
Split graph display screen



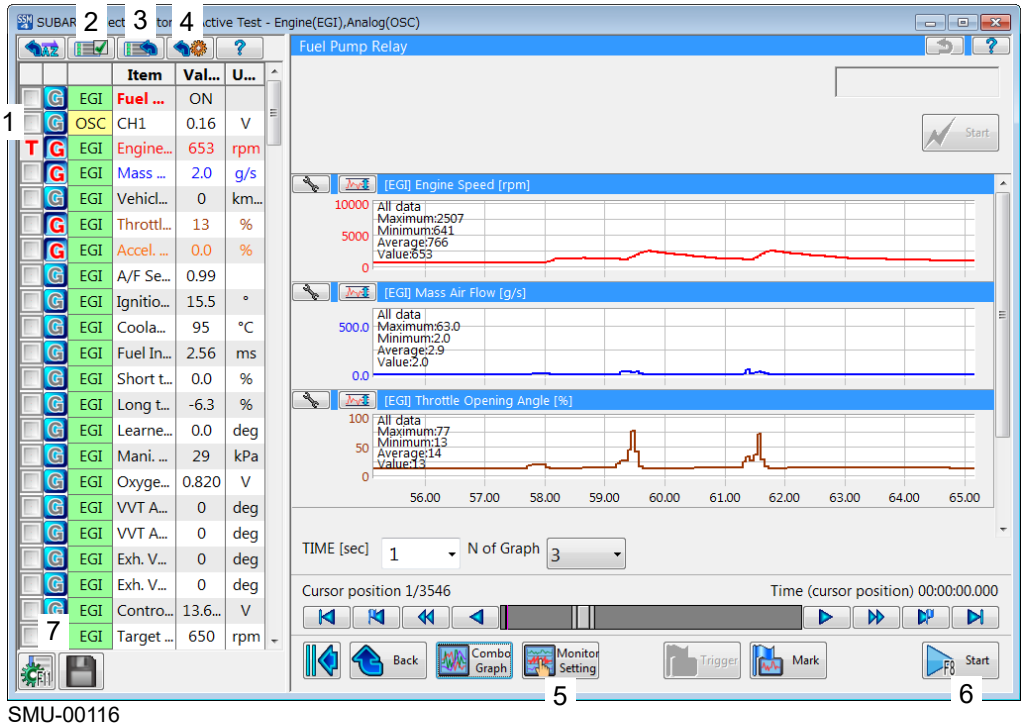
SMU-00115

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays signal graphs of the signals with display / not-display button pressed down for displayed items. Up to 150 signal graphs can be displayed. This enables you to change the display order by dragging and dropping the graph windows. This enables you to add the mark by clicking on the graph windows.
E	Number of samples	This displays the number of samples currently acquired.
F	Elapsed time	This displays the elapsed time from the start of measuring.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		This displays usable keyboard operations for the displayed screen.
4		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “12-7. Line graph settings” and “12-11. 2-cursor analysis” for more information.
5		This automatically configures the graph range. The applicable range can be configured with the “Graph settings”.
6		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
7		This configures the graph qty displayed together on one screen. This can set to a value between “1” and “7”.
8		This returns the display to the list display screen.
9		This displays the combo graph display screen. Refer to “12-6. Combo graph display” for more information.
10		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
11		This adds a mark. This enables you to add the mark by clicking on the graph windows. You can also add the marking by pressing the numeric key or alphabetical key.
12		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.
13		This enables you to change the width of the item display area and graph display area by dragging the cursor to the right and left.

Split graph display screen (while not measuring)



SMU-00116

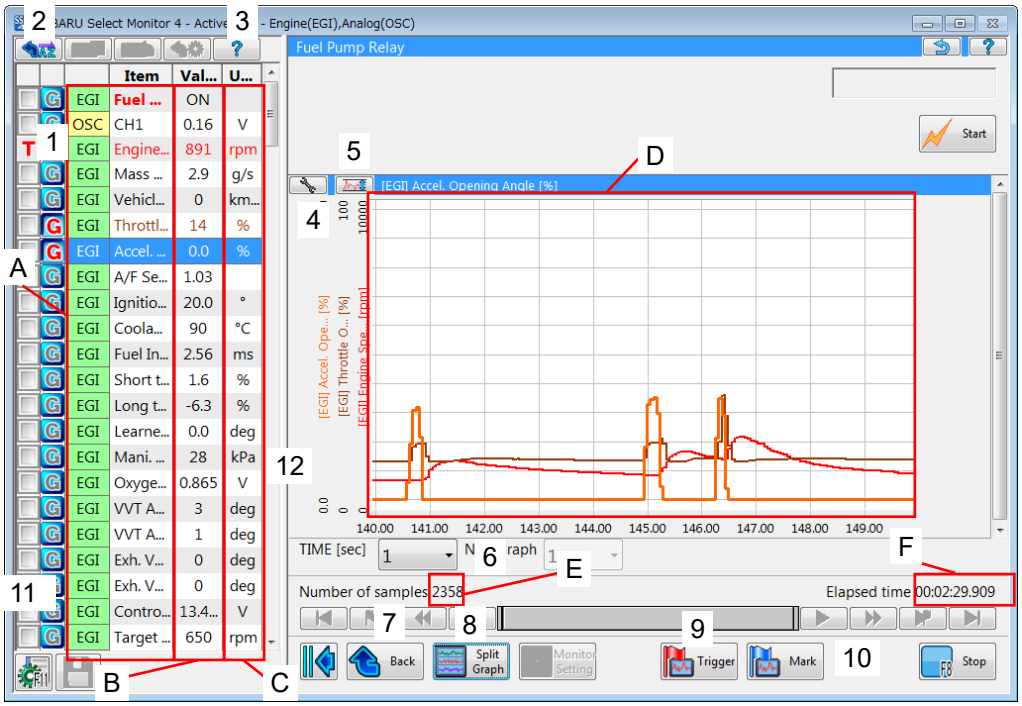
Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.
7		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

12-6. Combo graph display

- Click either <11> "Combo Graph" on the list display screen or <11> "Combo Graph" on the split graph display screen to display the combo graph display screen.

Combo graph display screen



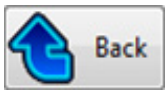
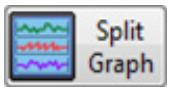
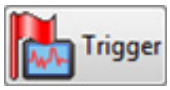
SMU-00117

Screen layout

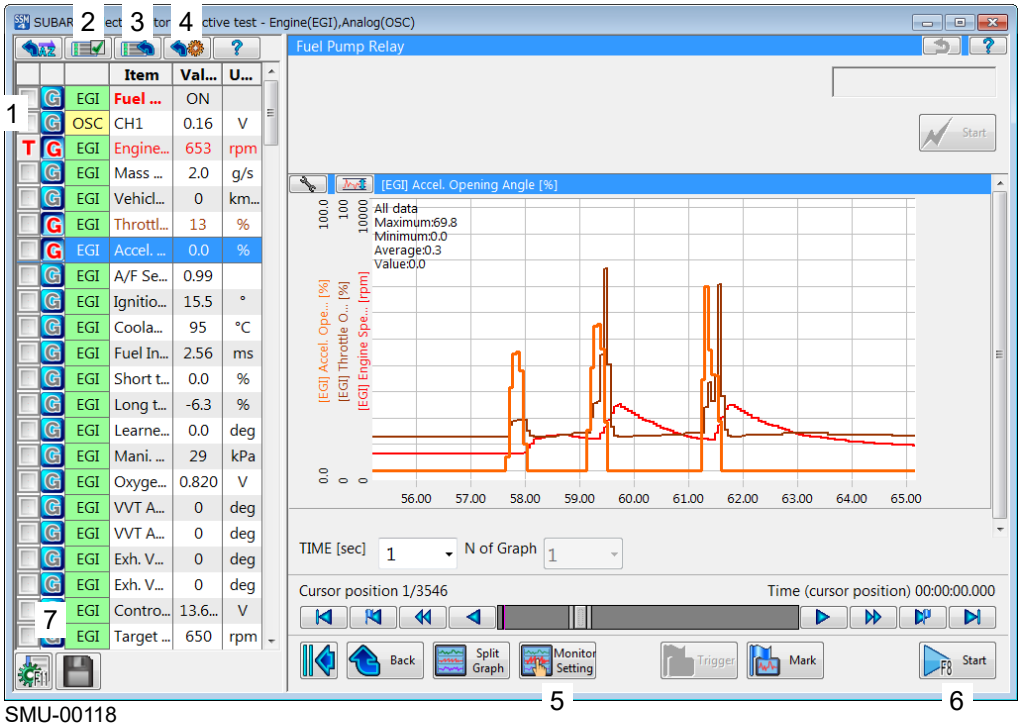
A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items. This enables you to add the mark by clicking on the graph windows.
E	Number of samples	This displays the number of samples currently acquired.
F	Elapsed time	This displays the elapsed time from the start of measuring.

Notes

- The graph qty cannot be selected.
  The graph qty automatically changes between 1 or 2 depending on the number of items.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		This displays usable keyboard operations for the displayed screen.
4		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “12-7. Line graph settings” and “12-11. 2-cursor analysis” for more information.
5		The graph range of items selected on the list display is automatically configured. The applicable range can be configured with the “Graph settings”.
6		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
7		This returns the display to the list display screen.
8		This displays the split graph display screen. Refer to “12-5. Split graph display” for more information.
9		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
10		This adds a mark. This enables you to add the mark by clicking on the graph windows. You can also add the marking by pressing the numeric key or alphabetical key.
11		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.
12		This enables you to change the width of the item display area and graph display area by dragging the cursor to the right and left.

Combo graph Display screen (while not measuring)



SMU-00118

Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5	Monitor Setting	This displays the select signal screen. This cannot be clicked when measuring is in progress.
6	F8 Start	This starts measuring. The items that are not displayed by the <2> button are not measured.
7		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

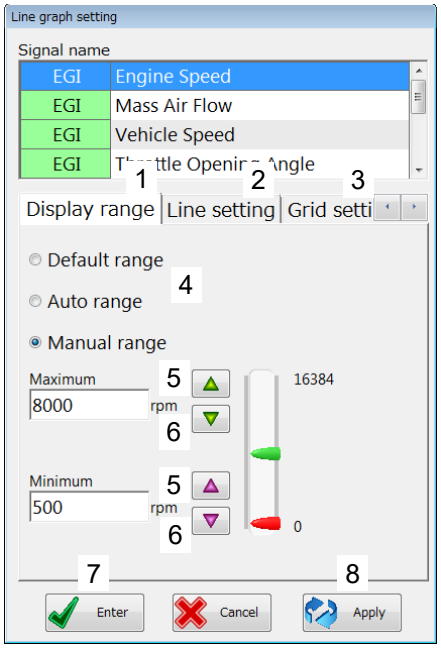
12-7. Line graph settings

- Click the - “Graph settings” on the split graph display screen or combo graph display screen to display the display range settings screen.

Notes

- This enables you to select signal names and configure each signal when changing the display from the combo graph display screen to the display range settings screen.

Display range settings screen



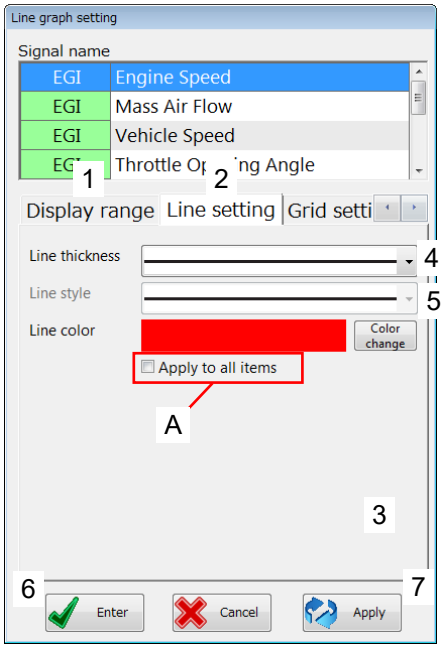
SMU-00095

Operating instructions

1	Line setting	This displays the line settings screen.
2	Grid setting	Displays a grid setup screen.
3	2 cursor	Displays a 2-cursor setup screen.
4	Default range Auto range Manual range	This selects the method to configure the graph range. The default range for value axis (vertical axis) of the graph is configured to the specified value of each signal. Auto range automatically configures the value axis of the graph on the basis of measured signal values. Configure the maximum and minimum values as desired for manual ranges. This cannot be configured for certain signals. Values can also be directly entered into text boxes.
5		Raises the maximum and minimum values. This also enables you to adjust the value with the slider bar.
6		Lowers the maximum and minimum values. This also enables you to adjust the value with the slider bar.
7	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.

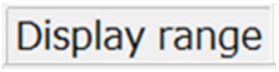
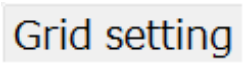
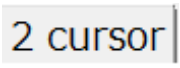
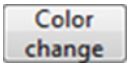
8		This confirms the changed settings.

Line settings screen

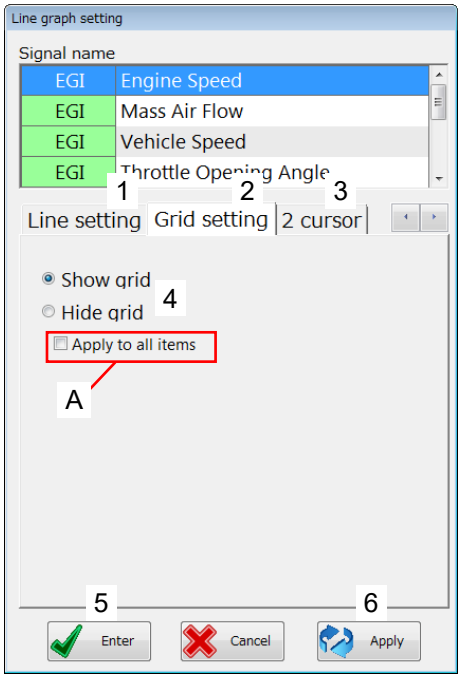


SMU-00096

Operating instructions

1		Displays a display range setup screen.
2		Displays a grid setup screen.
3		Displays a 2-cursor setup screen.
4		This changes the thickness and style of lines. Line styles can be selected only when the line width has been set to the thinnest option.
5		This changes the color of lines. Select the color from the color palette. If the <A> “Apply to all items” check box is selected, the selected line color applies to all signals.
6		This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
7		This confirms the changed settings.

Grid setup screen

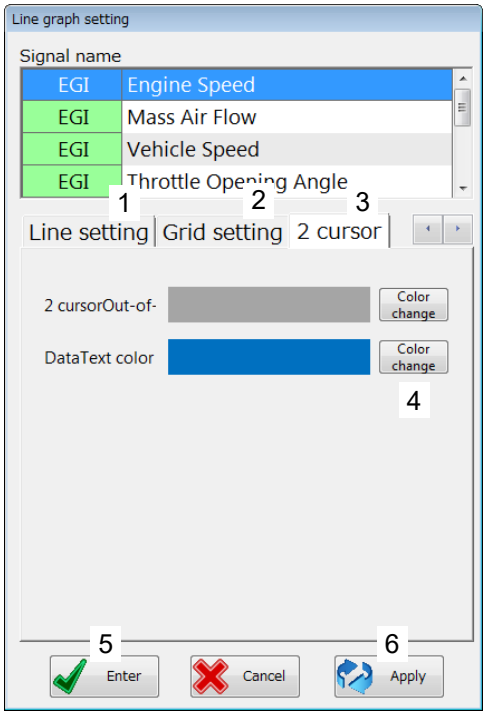


SMU-10042

Operating instructions

1	Display range	Displays a display range setup screen.
2	Line setting	Displays a line setup screen.
3	Grid setting	Displays a grid setup screen.
4	Show grid Hide grid	Sets whether to show or hide the grid on graph screens. Selected options are set for all signals when a checkmark is placed in the <A>"Apply to all signals" checkbox.
5	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
6	Application	This confirms the changed settings.

2-cursor setup screen



SMU-10043

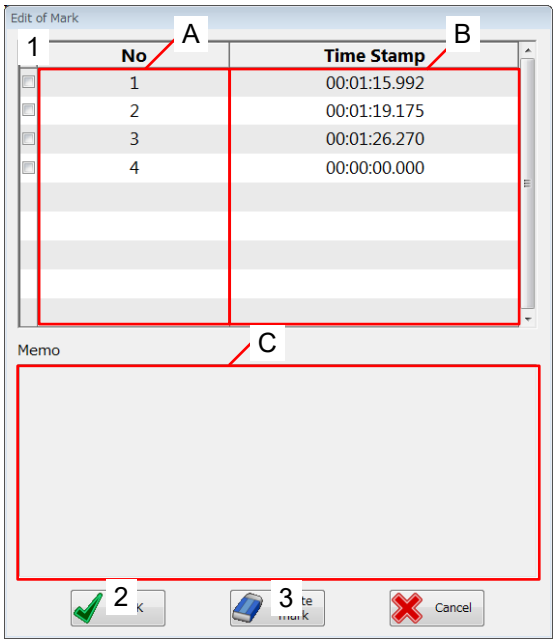
Operating instructions

1	Display range	Displays a display range setup screen.
2	Grid setting	Displays a grid setup screen.
3	2 cursor	Displays a 2-cursor setup screen.
4	Color change	This changes the color of lines. Select the color from the color palette. If the <A> “Apply to all items” check box is selected, the selected line color applies to all signals.
5	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
6	Application	This confirms the changed settings.

12-8. Edit of Mark

- Click "Edit of Mark" under on the Split graph display screen or Combo graph display screen to display the mark editing screen. Or, the mark editing screen is displayed by double-clicking the marked parts.

Mark editing screen

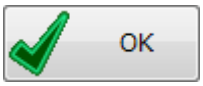


SMU-10034

Screen layout

A	No	This displays the mark number. The mark number is numbered in order of time when the mark is added.
B	Time Stamp	This displays the elapsed time from the start of measuring in the position where the mark is added.
C	Memo	This displays the memo input in the mark settings screen.

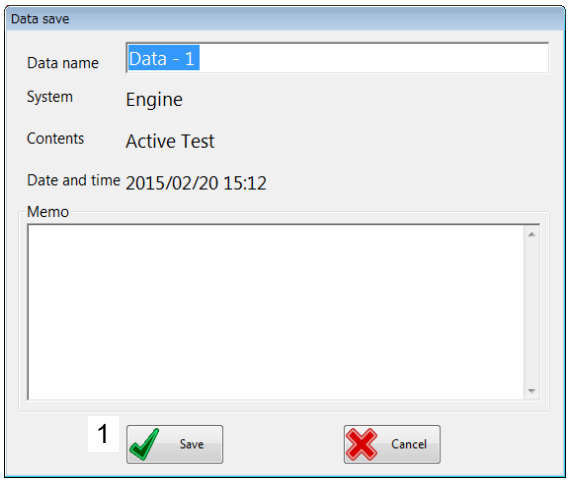
Operating instructions

1		Click to display the check box to select. Click again to deselect.
2		This returns the display to the split graph display screen or the combo graph displayscreen. In this case, this confirms the changed settings.
3		This removes marks with selected check boxes.

12-9. Saving data

- Click the in the menu display area to display the data save screen.

Data save screen



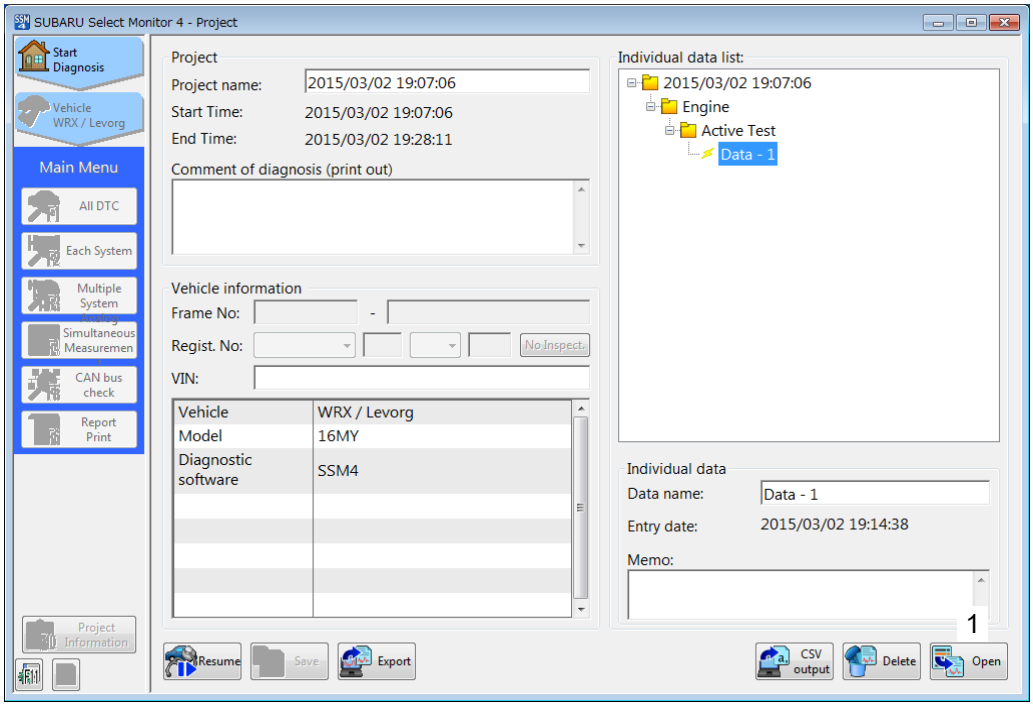
SMU-00121

- Change the data name and enter notes as necessary, and then click <1> "Save" on the data save screen to save the data to a project and close the screen.

12-10. Loading data

- Click “Project Information” in the menu display area to display the project screen during the diagnosis.

Project screen



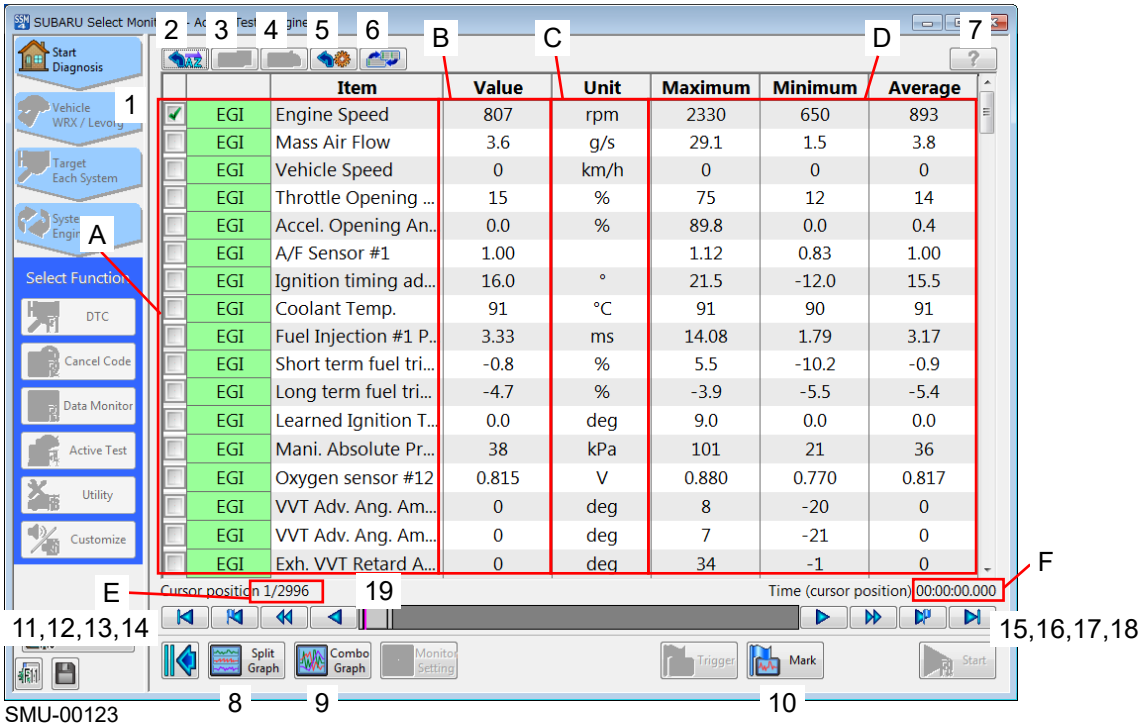
SMU-00122

- Double-click on the desired individual active test file from the individual data list on the project screen or select the desired data and click <1> "Open" to display the load data screen.

Notes

- For the automatic saving data, “Auto save” is written in the memo field.
- The saved active test data is under the "Active test" in the individual file list.

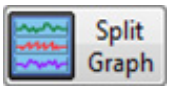
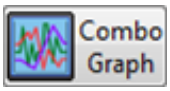
Load data screen (List display)



SMU-00123

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Maximum, minimum, average	This displays the maximum, minimum, and average values for all data.
E	Cursor position	This displays the current cursor position and total number of samples.
F	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

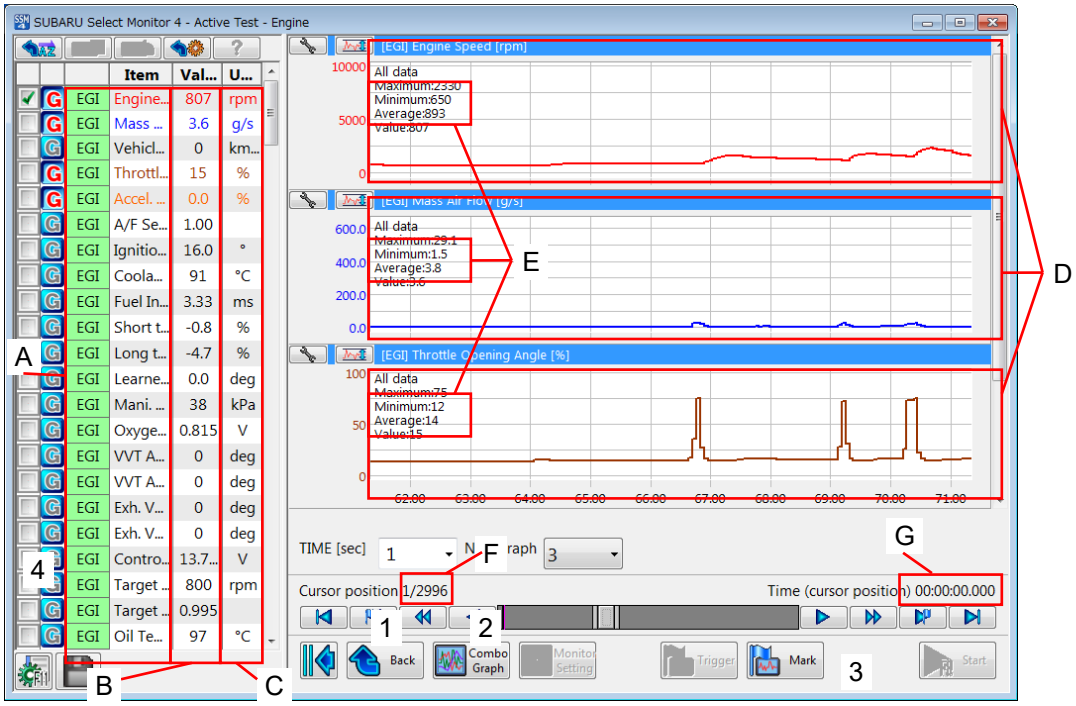
1		Click to display the check box to select. Click again to deselect.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Hides all items without a checkmark in the checkbox or trigger icon. Parameters not displayed are not removed from signal groups.
4		This displays all undisplayed items.
5		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
6		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
7		This displays usable keyboard operations for the displayed screen.
8		This displays the load data screen (Split graph display).
9		This displays the load data screen (Combo graph display).
10		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark.
11		This moves to the beginning of the scroll bar.
12		This moves to the next marked position on the left.
13		This moves the data position (sampling unit) one graduation to the right.
14		This moves data position (sampling unit) one data point to the left.
15		This moves data position (sampling unit) one data point to the right.
16		This moves the data position (sampling unit) one graduation to the right.
17		This moves to the next marked position on the right.
18		This moves to the end of the scroll bar.
19		This enables you to adjust the amount of time (width) displayed on one graph display screen by stretching the end of the scroll bar as desired. The display does not change when stretching the scroll bar on the list display screen.

Notes

- Running and stopping the active test as well as starting triggering cannot be performed on the load data screen.

- Click either <8> “Split Graph” on the load data screen (List display) or <2> “Split Graph” on the load data screen (Combo graph display) to display the load data screen (Split graph display).

Load data screen (Split graph display)

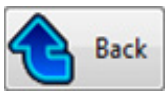
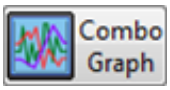


SMU-00124

Screen layout

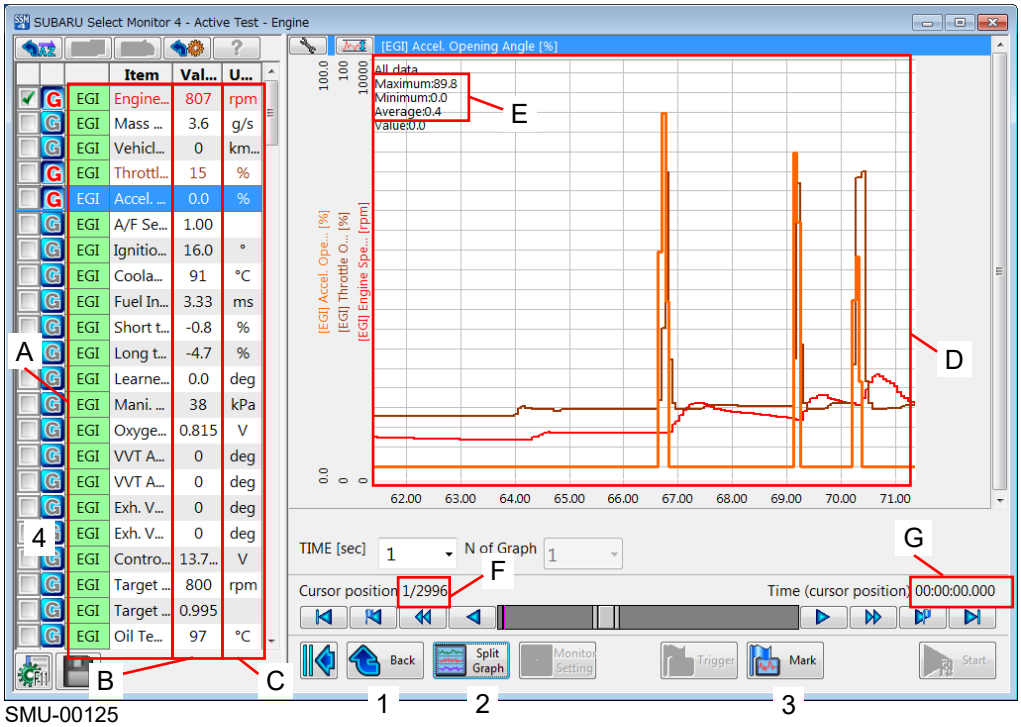
A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays all signal graphs for displayed items. This enables you to change the display order by dragging and dropping the graph windows.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

Operating instructions

1		This returns the display to the load data screen (List display).
2		This displays the load data screen (Combo graph display). Refer to “12-6. Combo graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark. Marks can be edited by double-clicking the parts where the mark is located. For a detailed explanation, see “12-8. Edit of Mark”.

- Click either <9> “Combo Graph” on the load data screen (List display) or <2> “Combo Graph” on the load data screen (Split graph display) to display the load data screen (Combo graph display).

Load data screen(Combo graph display)

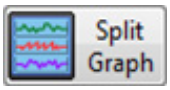


SMU-00125

Screen layout

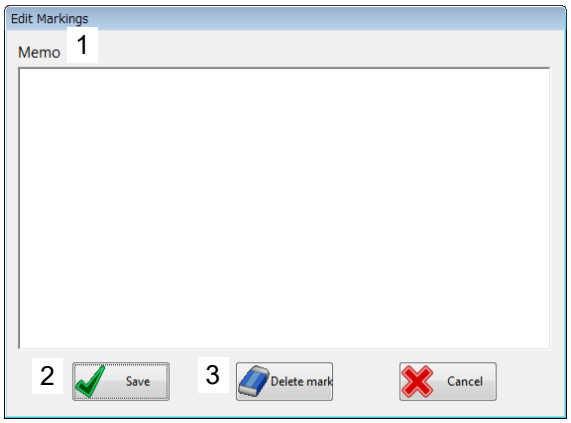
A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

Operating instructions

1		This returns the display to the load data screen (List display).
2		This displays the load data screen (Split graph display). Refer to “12-5. Split graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark. Marks can be edited by double-clicking the parts where the mark is located. For a detailed explanation, see “12-8. Edit of Mark”.

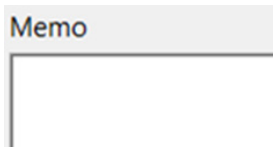
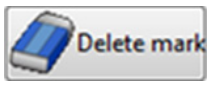
- Click “Mark” on the load data screen to display the mark settings screen.

Mark settings screen



SMU-00126

Operating instructions

1		This enables you to enter notes to marked positions.
2		This saves mark information. This creates a new mark if the position is not currently marked. If the position is currently marked, the note information is overwritten.
3		This deletes the mark. The operation of this button is only effective when “Mark” is clicked at a marked position.

Notes

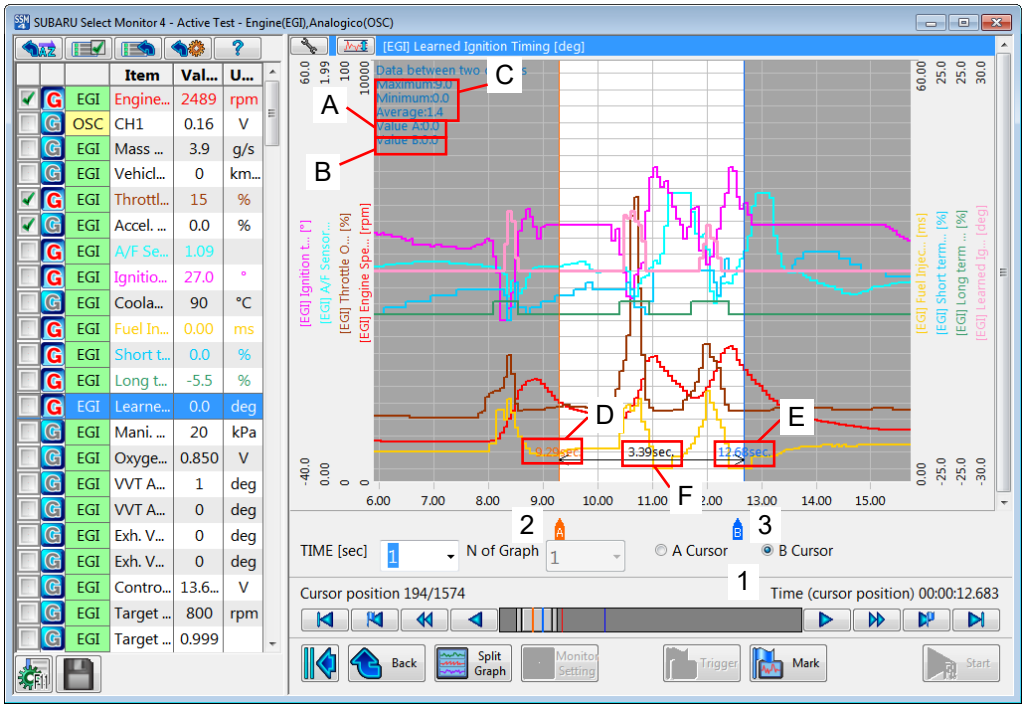
- The confirm data overwrite screen displays if you try to close the data monitor without saving after changes were made to the display state.

12-11. 2-cursor analysis

2-cursor analysis enables you to add the values of any two points of measured data and the maximum, minimum, and average values between these two points.

- Click the - “2-cursor analysis” on the split graph display screen or combo graph display screen to display the 2-cursor analysis screen.

2-cursor analysis screen



SMU-00127

Screen layout

A	Value A: *	This displays the signal value at the A cursor position.
B	Value B: *	This displays the signal value at the B cursor position.
C	Maximum:* Minimum:* Average:*	This displays the maximum, minimum, and average values between the two cursor positions.
D	*.** sec. (red characters)	This displays the time for the A cursor position.
E	*.** sec. (blue characters)	This displays the time for the B cursor position.
F	*.** sec. (black characters)	This displays the difference in time between the two cursor positions.

Operating instructions

1	A Cursor B Cursor	This switches over the selection of the main cursor. This displays the signal value or information on cursor positions according to the position of the selected main cursor.
2		Drag the icon to move the position of cursor A.
3		Drag the icon to move the position of cursor B.

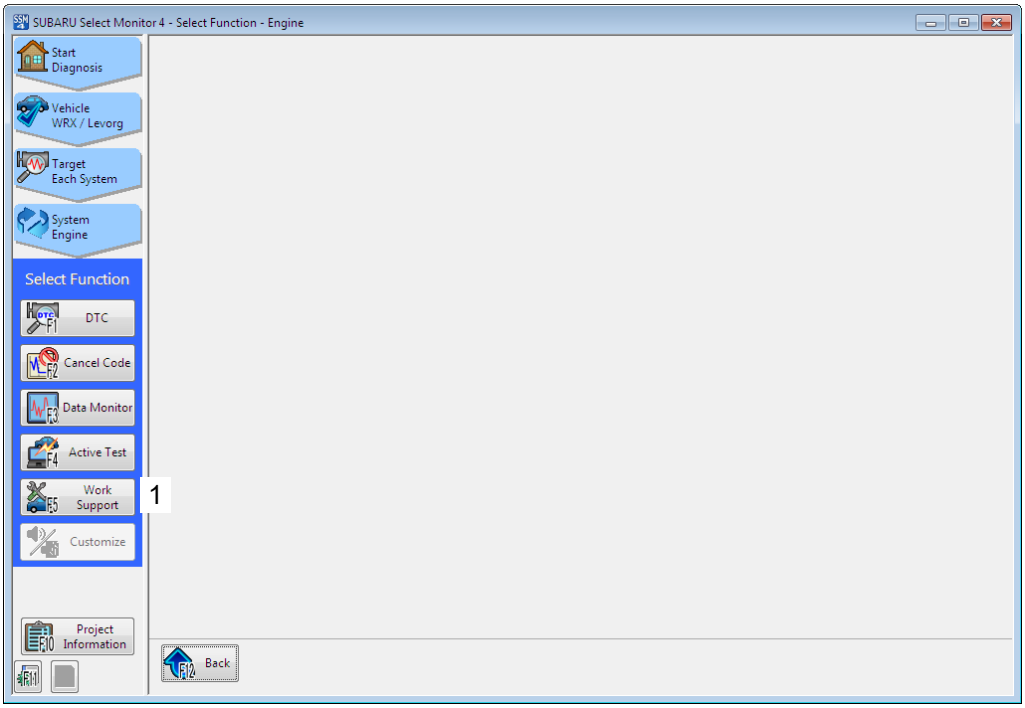
13. Work Support

Various items of utilities are available.

Notes

- The following example in which “Engine Control System” is selected on the select system screen will be described.

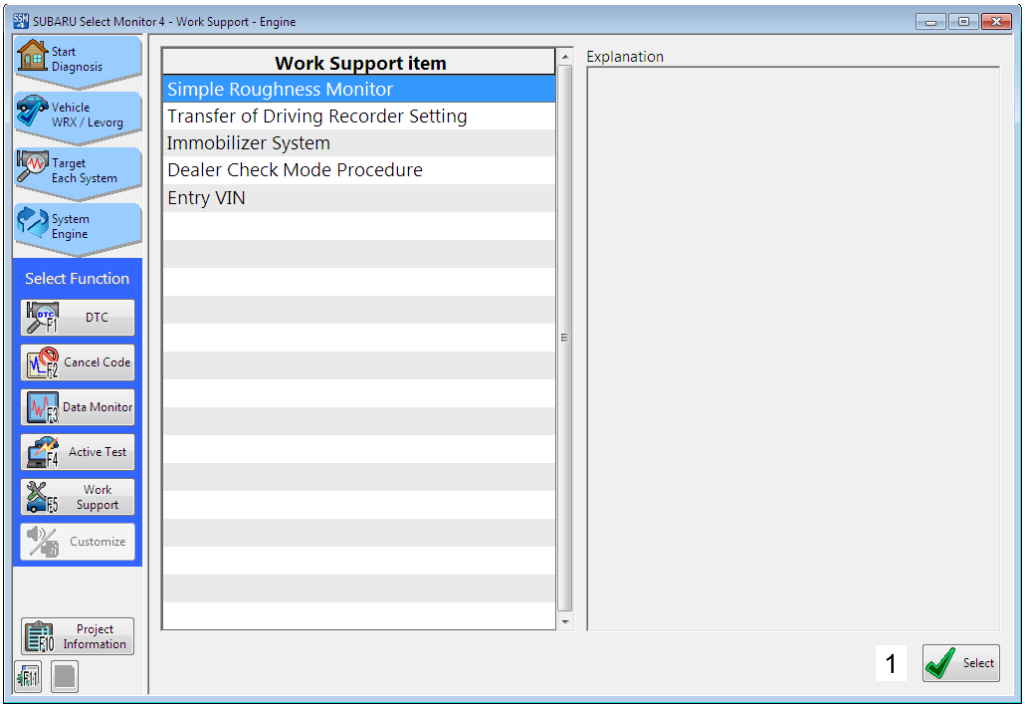
Select function screen



SMU-00220

- Click <1> “Work Support” on the select function screen to display the item selection screen.

Item selection screen



SMU-00221

- After selecting an item from the item selection screen, click <1> “Select” to display the screen for the selected item.

Notes

- The screen displayed and operation thereof differs depending on the selected item.

13-1. Cylinder monitor

The cylinder monitor allows you to monitor the combustion state of each monitor.
This function has two modes, which are “Simple Roughness Monitor” and “High-Grade Roughness Monitor”.

The simple roughness monitor displays the engine speed and cylinder misfire counter similarly with the normal SSM4 data monitor.
The High-grade roughness monitor calculates the standard deviation, engine speed, and other parameters on the basis of pulse data from the crankshaft position sensor and camshaft position sensor and then displays these values and related graphs.

Notes

- Standard deviation is a numerical representation of the variation in speed between some or all cylinders. If this value is abnormally high in comparison with other cylinders, this indicates a faulty combustion state. This function also displays average engine speeds, which also indicates a faulty combustion state if this value is abnormally higher than for other cylinders.

13-1-1. Simple roughness monitor

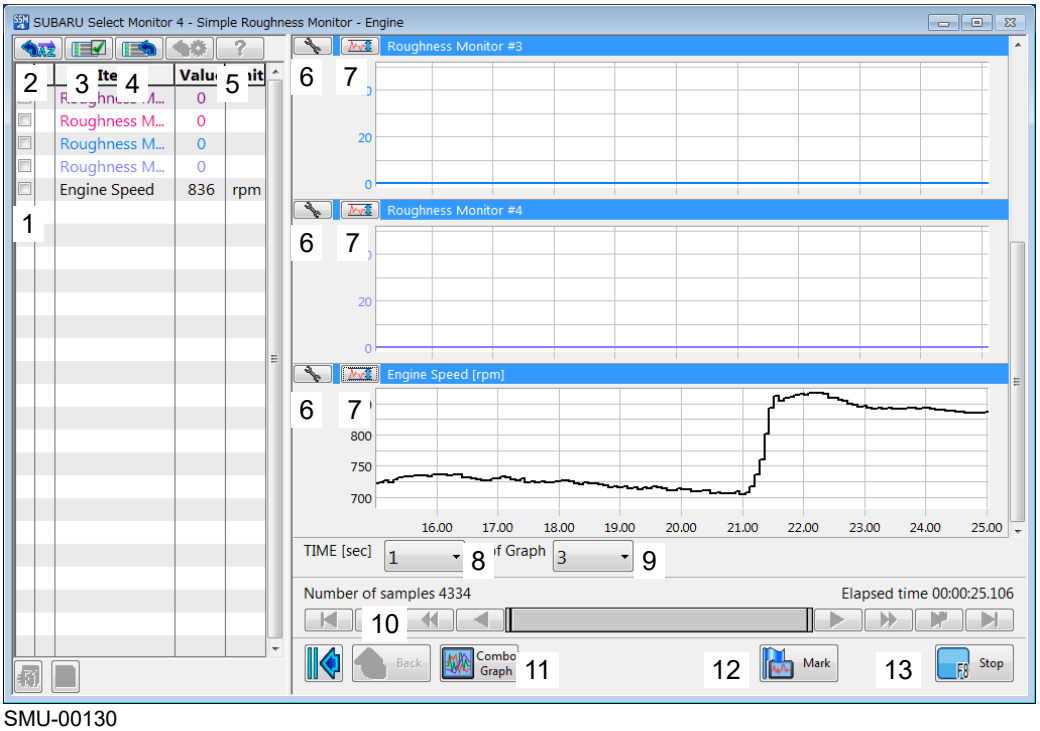
This displays engine speed and the misfire counter for each cylinder.

- This starts the engine.
- Select “Engine Control System” from the system list on the select system screen and click “Enter” to display the select function screen.
- Click <1> “Work Support” on the select function screen to display the item selection screen.

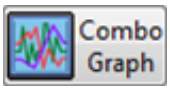
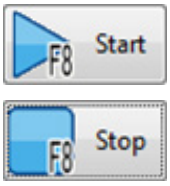
Split graph display

- Click "Simple Roughness Monitor" on the item selection screen to display the split graph display screen.

Split graph display screen



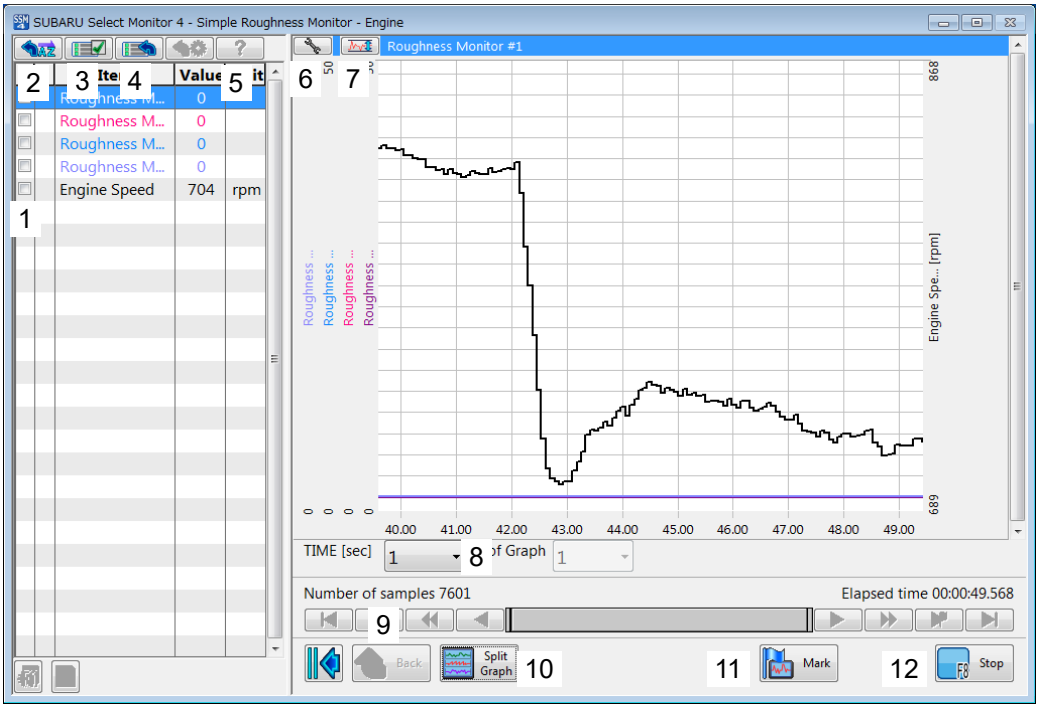
SMU-00130

1		Click to display the check box to select.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Items with deselected check boxes are not displayed.
4		This displays all undisplayed items.
5		This displays usable keyboard operations for the displayed screen.
6		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “Line graph settings” and “2-cursor analysis” for more information.
7		This automatically configures the graph range. The applicable range can be configured with the “Graph settings”.
8		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
9		This configures the graph qty displayed together on one screen. This can set to a value between "1" and "7".
10		This returns to the item selection screen.
11		This displays the combo graph display screen. Refer to “Combo graph display” for more information.
12		This adds a mark. This cannot be clicked when measuring is not in progress.
13		This starts and stops measuring.

Combo graph display

- Click <11> “Combo Graph” on the split graph display screen to display the combo graph display screen.

Combo graph display screen



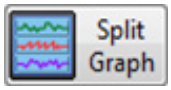
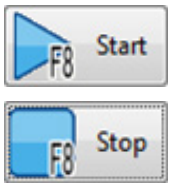
SMU-00131

Notes

- The graph qty cannot be selected.

Operating instructions

1		Click to display the check box to select.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Items with deselected check boxes are not displayed.
4		This displays all undisplayed items.
5		This displays usable keyboard operations for the displayed screen.
6		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “Line graph settings” and “2-cursor analysis” for more information.
7		The graph range of items selected on the list display is automatically configured. The applicable range can be configured with the “Graph settings”.
8		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
9	Back	This returns to the item selection screen.

10		This displays the split graph display screen. Refer to “Split graph display” for more information.
11		This adds a mark. This cannot be clicked when measuring is not in progress.
12		This starts and stops measuring.

Line graph settings

- Click the - “Graph settings” on the split graph display screen or combo graph display screen to display the settings screen.

Refer to “11-7. Line graph settings” for more information.

Saving data

Refer to “11-9. Saving data” for more information.

Loading data

Refer to “11-10. Loading data” for more information.

2-cursor analysis

Refer to “11-11. 2-cursor analysis” for more information.

Data comparison

Refer to “11-12. Data comparison” for more information.

13-1-2. High-grade roughness monitor

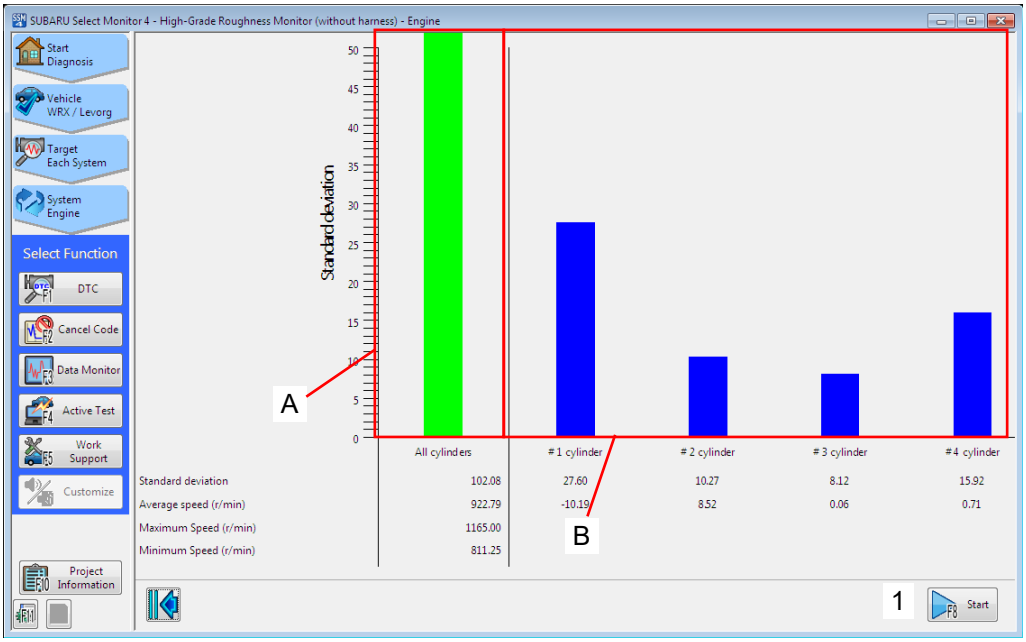
The advanced cylinder monitor calculates the standard deviation, engine speed, and other parameters on the basis of pulse data from the crankshaft position sensor and camshaft position sensor and then displays these values and related graphs.

- This starts the engine.
- Select “Engine Control System” from the system list on the select system screen and click “Enter” to display the select function screen.
- Click <1> “Work Support” on the select function screen to display the item selection screen.

Bar graph display

- Click “High-Grade Roughness Monitor (without harness)” on the item selection screen to display the cylinder monitor screen.

Cylinder monitor screen



SMU-00132

Screen layout

A	Results display (all cylinders)	This displays calculation results for all cylinders.
B	Results display (individual cylinders)	This displays calculation results for individual cylinders. The maximum and minimum speeds are not displayed.

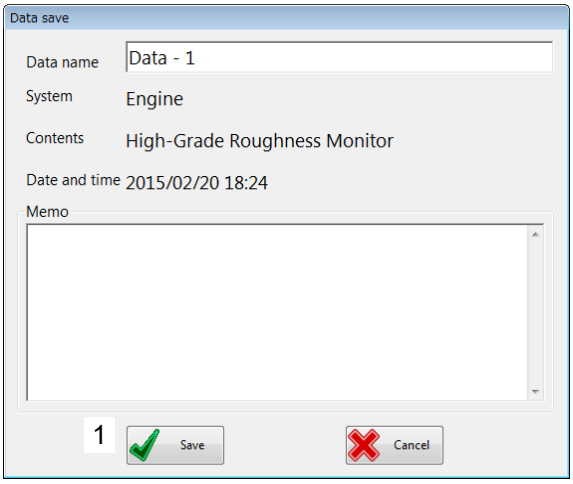
Operating instructions

1		This starts and stops measuring and calculating. This cannot be clicked when data is loaded.

Saving data

- Click the in the menu display area to display the data save screen.

Data save screen



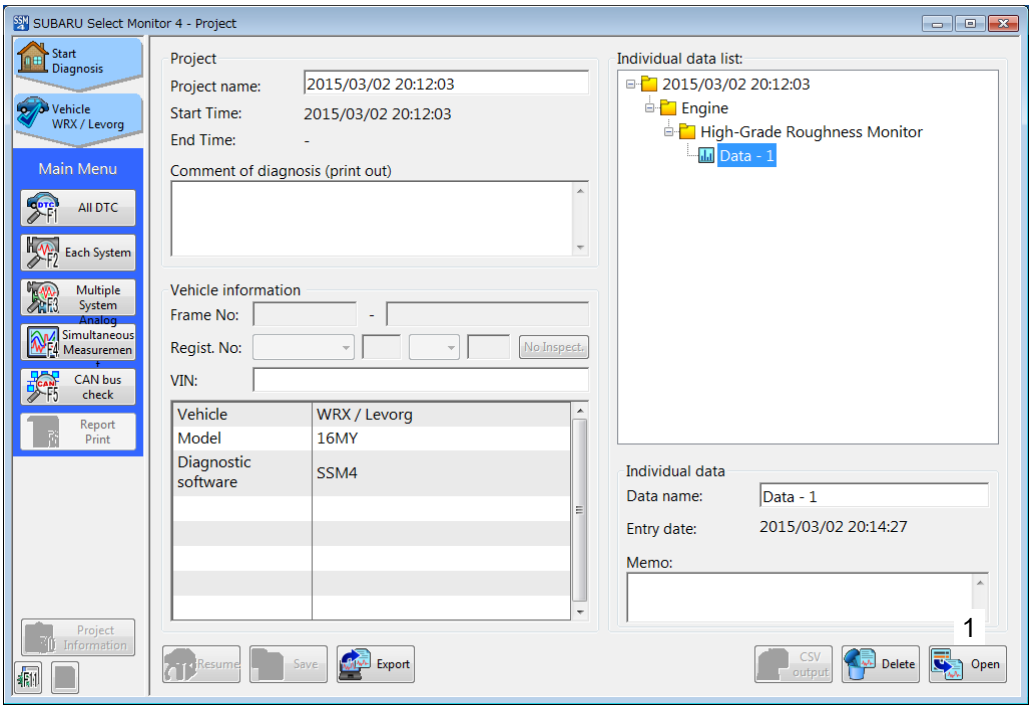
SMU-00133

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

Loading data

- Click “Project Information” in the menu display area to display the project screen during the diagnosis.

Project screen



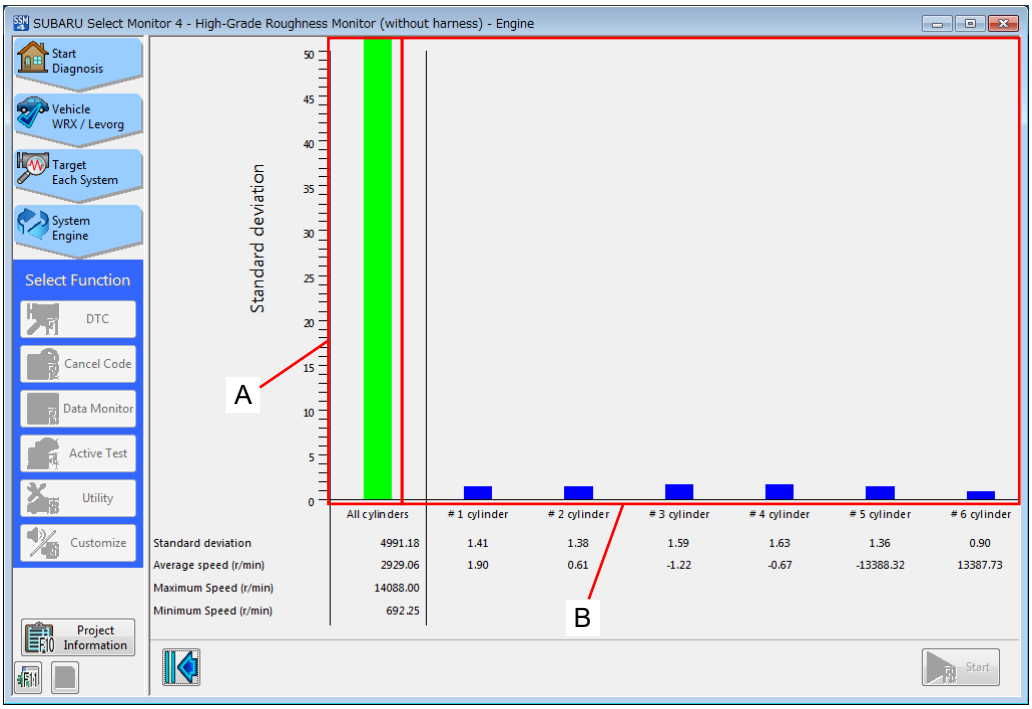
SMU-00134

- Double-click on the desired individual data monitor file from the individual data file list on the project screen or select the desired data and click <1> “Open” to display the load data screen.

Notes

- For the automatic saving data, “Auto save” is written in the memo field.
- The saved data by the advanced cylinder monitor is under the “High-grade roughness monitor” in the individual data list.

Cylinder monitor screen



SMU-00135

Screen layout

A	Results display (all cylinders)	This displays calculation results for all cylinders.
B	Results display (individual cylinders)	This displays calculation results for individual cylinders. The maximum and minimum speeds are not displayed.

13-2. Dealer Check Mode Procedure

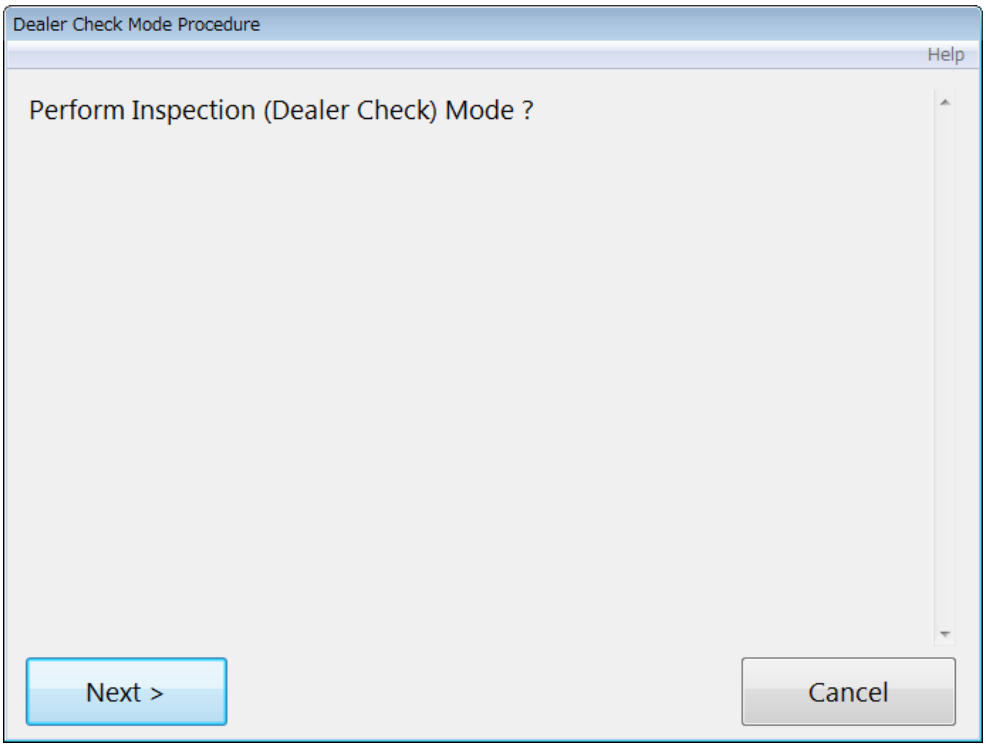
This function can be used to perform inspection of a simplified dealer check by performing operations as prompted by messages that appear on the PC display.
The Dealer check mode procedure is one of the self-diagnostic functions of the control module. The dealer check mode provides the means to perform more thorough system fault diagnosis.

Notes

- The delivery mode fuse (test mode connector) must be connected in order to perform the Dealer check mode.
- Do not use the fuse which equipped on vehicle.
- Make sure the vehicle's ignition switch is off before connecting or disconnecting the delivery mode fuse (test mode connector).
- When performing the Dealer check mode while the vehicle is in operation, never allow the driver to operate the SSM4 or DST-i.
- Depending on the vehicle being diagnosed, the Dealer Check Mode function may not be available.

13-2-1. Entering the Dealer Check Mode

- Select "Engine" from the system list on the select system screen and click "Next" to display the select function screen.
- Click <1> "Work Support" on the select function screen to display the item selection screen.
- Click <2> "Dealer Check Mode Procedure" to display the Dealer Check Mode execution screen.
- Click "Next" in the Dealer Check Mode execution screen to display the Dealer Check Mode operating instructions screen. Follow the operating instructions to execute the Dealer Check.



SMU-01575

Notes

- After completing the Dealer check mode procedure, turn off the vehicle's ignition switch and disconnect the delivery mode fuse (test mode connector).

13-2-2. When a fault is detected by the Dealer check mode procedure

The applicable diagnostic code appears when a fault is detected. Check the diagnostic codes, and perform repair work in accordance with Service Manual fault diagnosis procedures.

13-3. SUBARU Driving Recorder (SDR)

The Subaru Driving Recorder (SDR) is functionally equipped to continuously measure and save vehicle data when the DST-i is installed in the vehicle. The SDR is effective in investigating the causes of vehicle failures that are difficult to reproduce.
The following are the steps for sampling and analysing data.
1) Create an SDR Setting File.
2) Transfer the SDR setting file to the DST-i.
3) Measure SDR data with a single DST-i.
4) Save the sampled SDR data.
5) Open and analyze the saved SDR data with a computer.

Caution

- When the driving recorder function is used for measuring, driving is done with the datalink cable connected to the data link connector, and care is required so that there is no obstacle for driving. Also, the safety considerations for driving and measuring the car with attached cable must be explained sufficiently to the customer, and measuring shall be done after approval by the customer.
  Recommended option: Datalink cable (L-shape, 3.0m Part No.95171-11740)
- When measurement is not needed, You will be sure to OFF/REC the mode switch. (Such as after the ignition switch OFF) If you left for a long time in the ON the mode switch, the battery goes up surely.

Notes

- When you measure it using a driving recorder function, SD card is necessary. Please prepare beforehand.
- For information on how to install the SD card, see the separately bound “DST-i Hardware Instruction Manual.”
- Be sure to turn off DST-i power before installing a SD card into or removing a SD card from its card slot. Inserting or removing a SD card while DST-i power is turned on runs the risk of damaging SD card contents.
- When you measure it using a driving recorder function, there are two methods. It is the way of the “Recorded in the state to the ON mode switch” and “Recorded in a state of OFF / REC mode switch”.
- When using this function, always take measurements after you have created a setting file for the desired vehicle model. Measurement is not possible if the setting file stored in the SD card is for another vehicle model.

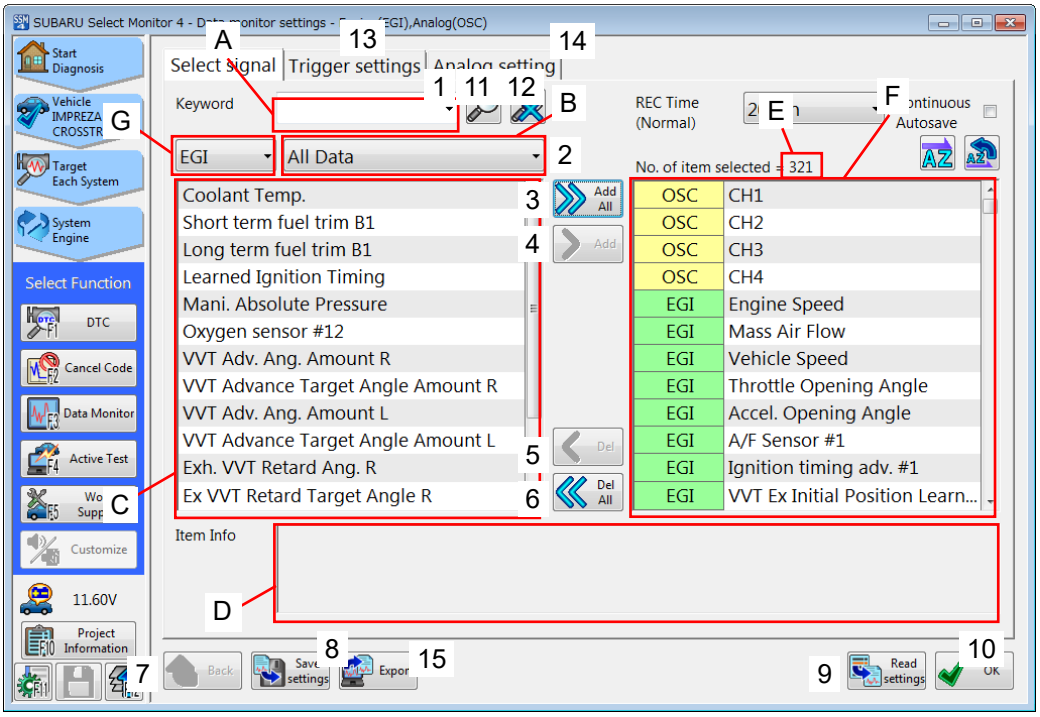
13-3-1. Creating an SDR Setting File

Create an SDR setting file with selected signals in the SD card installed in the DST-i.

- Double-click the system you want to diagnose from the system list on the select system screen or select the select and click <1> “Next” to display the select function screen.
- Click <1> “Work Support” on the select function screen to display the item selection screen.
- After selecting <4> “Transfer of Driving Recorder Setting” from the item selection screen, click <1> “Select” to display the select signal screen.

Select signals

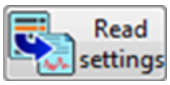
Select signal screen



SMU-10001

Screen layout

A	Keyword	This field is where keywords used to filter signals are entered. This enables you to select previously entered keywords from the pull-down menu.
B	Signal group	This is a pull-down menu used to select signal groups.
C	List of selectable signals	This displays measurable signals by the system during diagnostics. The signals displayed differ depending on the selected signal group.
D	Item Info	This displays information on signals selected from the list of selectable signals. Item information may not be displayed depending on the selected signal.
E	No. of item selected	This displays the number of signal items displayed in the list of selected signals.
F	List of selected signals	This displays the signals selected from the list of selectable signals.
G	System name display area	Abbreviated system names for each signal are displayed. By selecting “OSC” analog measurement signals can be added. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

1		This is used to filter the display of signals containing keywords. Enter a keyword or select one from the pull-down menu and then click <11> to filter signals. Click <12> to remove the filter.
2		Signals registered in signal groups selected from the pull-down menu are displayed in the list of selectable signals. Selecting “All Data” displays all signals.
3		This adds measurable signals to the list of selected signals. The insufficient signal against the upper limit 150 of the number of signals should be added.
4		This adds selected signals to the list of selected signals. Multiple signals can be selected at the same time. The upper limit of the number of signals differs by system.
5		This deletes selected signals to the list of selected signals. Multiple signals can be selected at the same time.
6		This removes signals from the list of selected signals.
7		This returns the system to the work support screen.
8		This saves SDR settings in the project. Selected signals, trigger settings and analog settings are saved.
9		This loads saved SDR settings.
10		This transfers the list of selected signals to the SD card of the DST-i as the SDR setting file.
15		This saves SDR settings as a file. The selected signals, trigger settings and analog settings are saved.

Notes

- The saved data monitor setting is also available other PC.
- The signals displayed in the list of selectable signals when “All Data” is selected differ depending on the system used and the vehicle for which the data monitor is performed.
- Signal groups first registered for each system differ depending on the system and the vehicle for which the data monitor is performed.
- When “Custom list” displayed in the signal group pull-down menu is selected, the most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the list of selected signals.
- The most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the area displaying the list of selected signals.

Trigger settings

This enables you to configure trigger detection conditions to apply triggers to automatically respond to measured signal values.

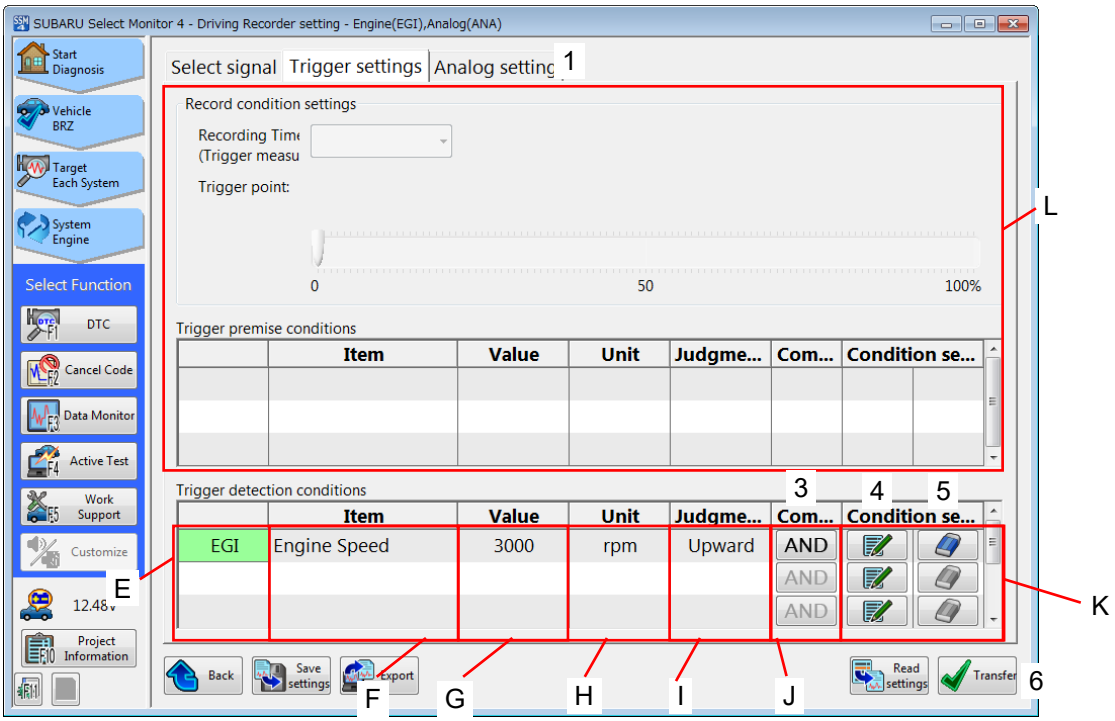
This enables you to configure different conditions for different signals and also configure conditional combinations.

- Click the <13> “Trigger settings” tab on the select signal screen to display the trigger settings screen.

Notes

- Configuring trigger detection conditions is not required to run the data monitor.
  In this case, click <10> “Confirmed” after selecting a signal on the select signal screen.

Trigger settings screen



SMU-10002

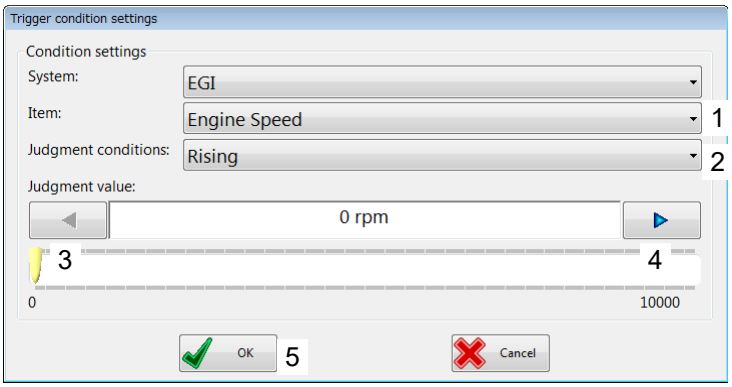
Screen layout

E	Trigger detection conditions	This displays the trigger detection conditions.
F	Item	This displays the name of signals for which conditions are configured.
G	Value	This displays the value functioning as the trigger condition.
H	Unit	This displays the unit of measure for each item.
I	Judgment conditions	This displays the judgment conditions for each item.
J	Combination	This displays the button to select the type of conditional combinations.
K	Condition setting	This displays buttons for condition settings.
L	(No function)	(No function. This is not used by the driving recorder.)

3		This sets the type of conditional combinations. Click to change between “AND” and “OR”.
4		This displays the configure trigger conditions screen. This enables you to configure trigger conditions for each signal.
5		This deletes trigger conditions for each signal.
6		This transfers the SDR setting file to the DST-i.

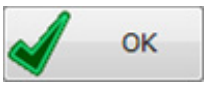
- Click the <4> on the trigger settings screen to display the configure trigger conditions screen.

Configure trigger conditions screen



SMU-00144

Operating instructions

1		This selects the name of signals for which trigger conditions are configured.
2		This changes the judgment conditions.
3		This lowers the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
4		This raises the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
5		This returns the display to the trigger settings screen.

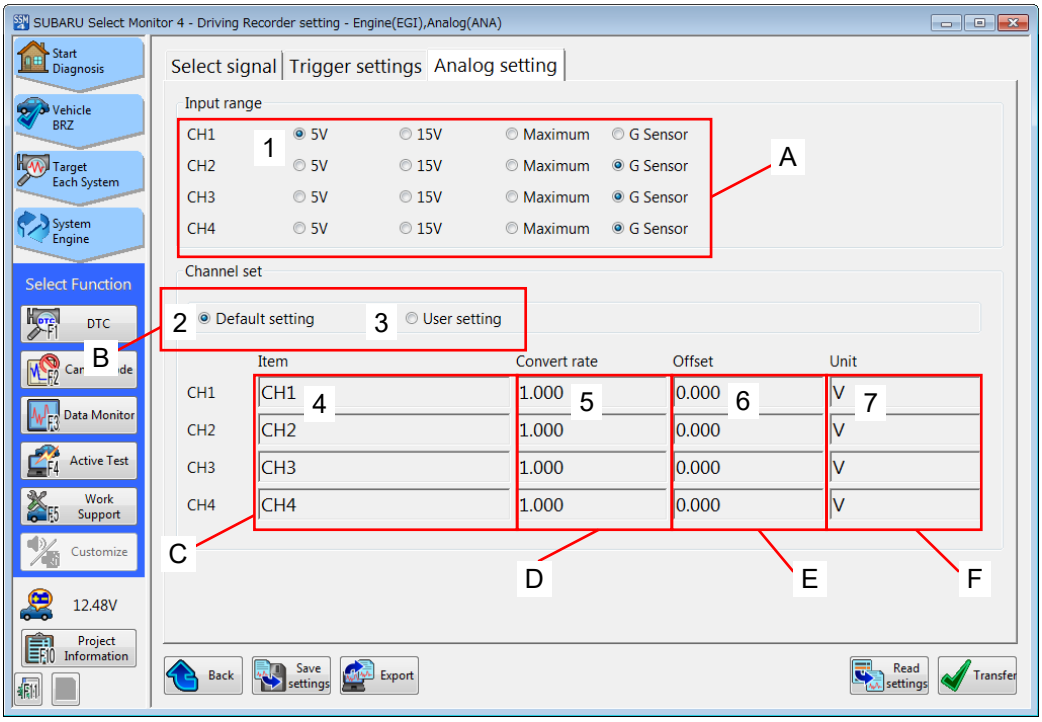
Analog settings

The analog settings includes input range and channel settings.

This also enables you to save configuration data and load saved configuration files.

- Click the <14> “Analog settings” tab on the select signal screen or the <1> “Analog settings” tab on the trigger settings screen to display the analog settings screen.

Analog settings screen



SMU-10003

Screen layout

A	Input range	This displays the input range for each channel. The input range is selected by clicking the radio button to the left of each item. The following ranges are available for each item. • 5 V: -5 V to +5 V • 15 V: -15 V to +15 V • Maximum: -150 V to +150 V • G sensor: -5V to +5V When measuring the G sensor output with the optional switch box cable, select a “G sensor”. The output destination channel of each G sensor is as follows. CH2: X-axis output CH3: Y-axis output CH4: Z-axis output Do not select the G sensor for CH1 because the switch box cable cannot physically connect to it.
B	Channel set	This displays the status of channel settings. The channel setting method is selected by clicking the radio button to the left of each item.
C	Item	This displays the channel name of each channel. This enables you to change this as desired.
D	Conversion rate	This displays the conversion rate for each channel. This displays values as they are measured in accordance with the multiplier configured for analog measured signal values.
E	Offset	This displays the offset value for each channel. This displays sum values as they are measured in accordance with the additional value configured for analog measured signals.
F	Unit	This displays the unit of measurement for each channel. The configured units are displayed on screen during measuring.

1		This enables you to select the input range for each channel.
2		Selecting this will return the “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel to their default settings. Item settings cannot be changed when the default settings are selected.
3		Selecting this enables you to change the settings of “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel.
4		Channel names can be entered as desired when “User settings” is selected.
5		The conversion rate value can be entered as desired when “User settings” is selected.
6		The offset value can be entered as desired when “User settings” is selected.
7		Units of measure can be entered as desired when “User settings” is selected.

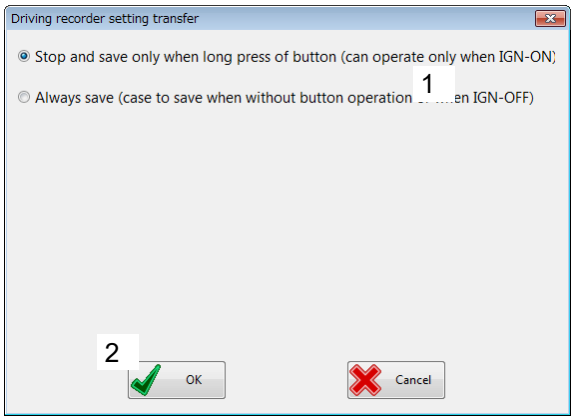
Notes

- All settings for analog measured signals (ch. 1-4) can be changed.
- Input the following values in the conversion rate and offset columns in the analog settings if you want to display G sensor output values as physical quantity (unit: G):
  Conversion rate: 1.515
  Offset: -2.5
  Unit: G

13-3-2. Transferring the SDR setting file.

- If you click the <10> “Transfer” button on the Select signal screen, the “Driving recorder setting transfer screen” appears.

Driving recorder setting transfer screen



SMU-10004

- On the Select drive screen, if you select <1> data save method and click <2> “OK”, the SDR setting file is transferred to the SD card of the DST-i. (Here, “Stop and save only when long press of button (can operate only when IGN-ON)” is selected.)

Notes

- “Stop and save only when long press of button (can operate only when IGN-ON)”: The SDR data is saved on the SD card during driving recorder measurement, by imparting the save operation. The saved SDR data extends from 10 minutes before the save operation was imparted to 5 seconds after it was imparted.
- “Always save (case to save when without button operation or when IGN-OFF)”
  It will measure the SDR data from the start of measurement driving recorder until the IG OFF operation. This data is saved to the SD card.
  If you disconnect the data link cable during driving recorder measurement, and if you have the power of the DST-i to OFF, SDR data will not be saved.

13-3-3. Recording and Saving SDR Data to SD Card

Connect the DST-i to the vehicle and record SDR data. The SDR data is recorded on the SD card of the DST-i.

- Insert the SD card that contains the SDR setting file into the SD card slot of the DST-i.

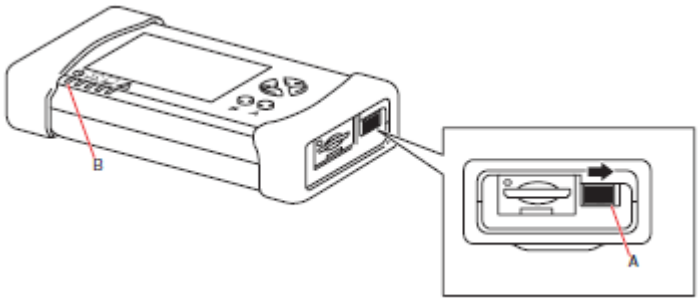
Notes

- Be sure to turn off DST-i power before installing a SD card into or removing a SD card from its card slot. Inserting or removing a SD card while DST-i power is turned on runs the risk of damaging SD card contents.

- Use the datalink cable to connect the DST-i to the datalink connector of the vehicle.

Recorded in the state to the ON mode switch

- Turn the mode switch of DST-i on, and confirm the “Power” indicator lights up in green.

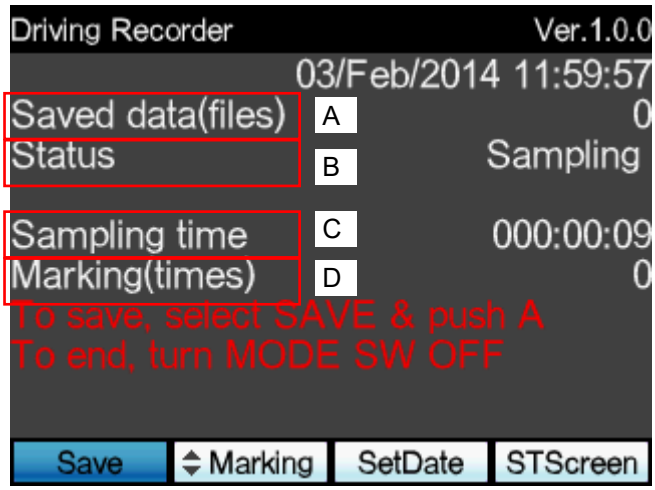


SMU-10005

A: Mode switch

B: Power indicator

- After the DST-i is turned on, sampling will start automatically and the screen shown below will appear on the DST-i.



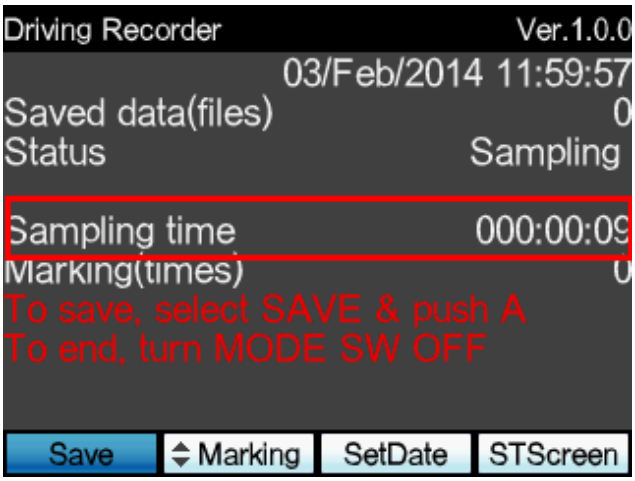
SMU-10006

Screen layout

A	Saved data (files)	Displays the data saved in the SD card.
B	Status	Displays the current measurement status.
C	Sampling time	Displays the duration of measurement from the start of measurement.
D	Marking (times)	Displays the number of times of marking. Marking can be done up to 16 times.

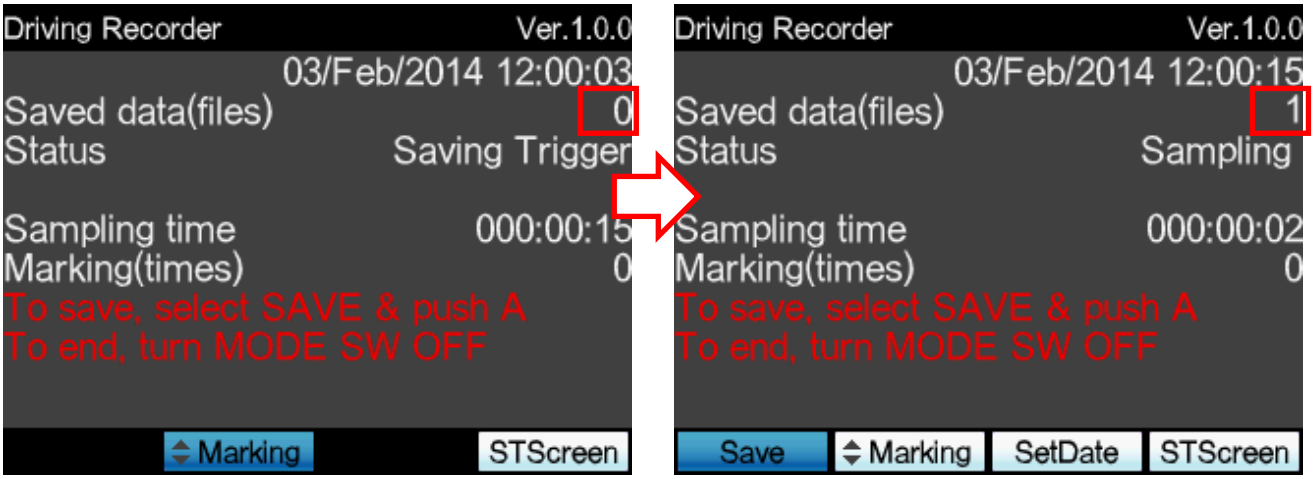
Notes

- In case that the DST-i operates as a driving recorder, “Driving Recorder” is shown on the screen.
- By on the screen “Sampling time” is counted, You understand that a measurement is carried out normally.



SMU-10007

- When sampling reaches the point you want to save, press the DST-i “A” key. Pressing the DST-i “A” key causes SDR data to be saved on the SD card. The screen shown below appears on the DST-i when SDR data is saved on the SD card.



SMU-10008

- Sample restarts automatically after the SDR data is saved to the SD card. If you want to stop sampling, disconnect the datalink cable from the vehicle's data link connector, or select “STScreen” in the DST-i screen and press the “A” key.

Notes
- With use of the optional switch box cable, the SDR data can be saved by switch operation.

Recorded in a state of OFF / REC mode switch

With the mode switch in the OFF/REC position, and the optional cigar lighter cable and switch box cable set connected, the power ON of DST-i can become a different element.

By pressing the trigger switch of the switch box, power to the DST-i can be turned on.

If the cigar lighter cable is connected, the DST-i can be started when the ACC power is turned ON.

If the door is opened/closed after setting the switch box in the door pocket, etc., the output voltage of the G sensor built in the switch box is detected and power to the DST-i is automatically turned ON.

Notes
- Other operating procedures are the same as when “Recorded in the state to the ON mode switch.”

13-3-4. Saving SDR Data to PC

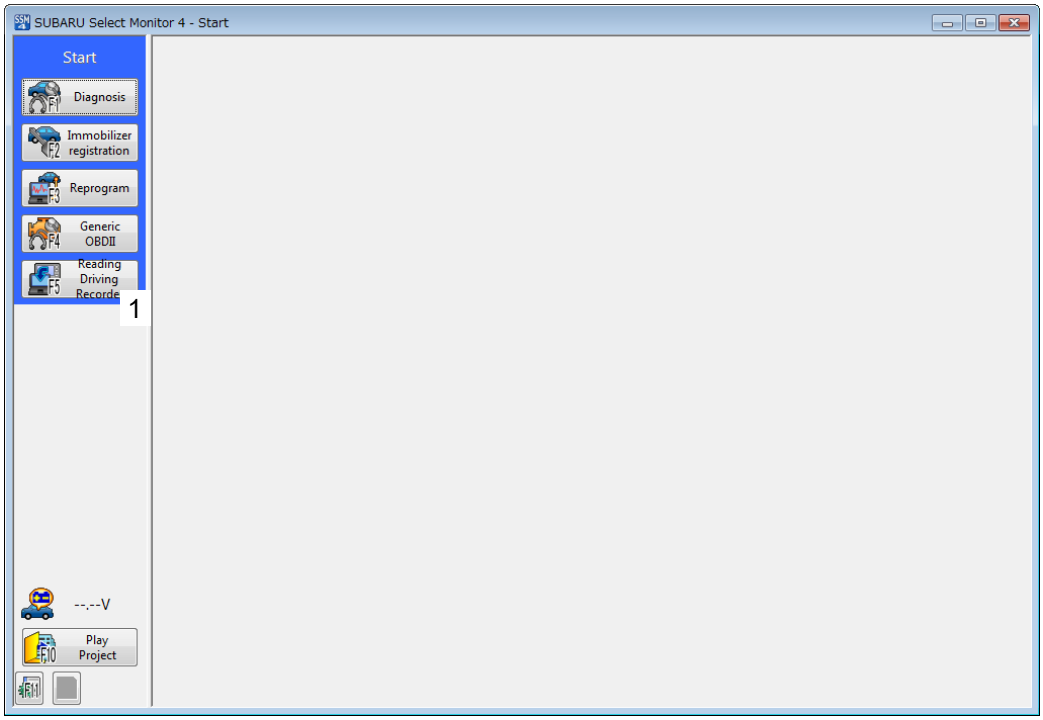
Save SDR data stored in a SD card as a new SSM project.SDR data can be read from a SD card in the card slot of the DST-i or in the card slot of a PC.

Notes

- Be sure to turn off DST-i power before installing a SD card into or removing a SD card from its card slot. Inserting or removing a SD card while DST-i power is turned on runs the risk of damaging SD card contents.

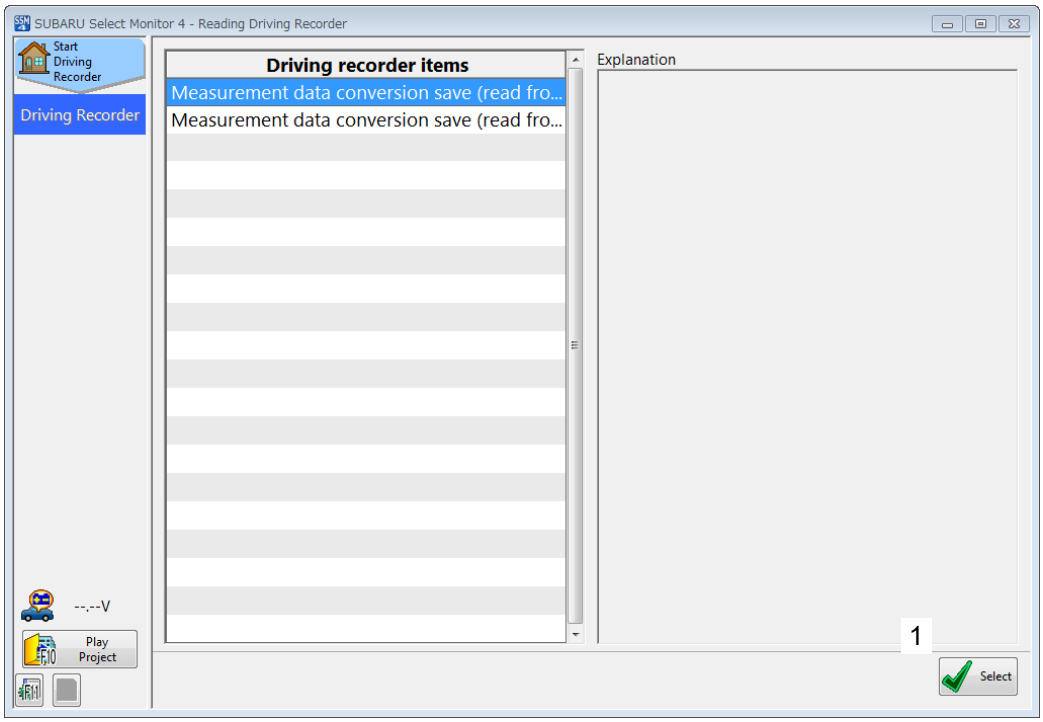
- Insert the SD card that contains the SDR data into card slot of the DST-i.
- Use the USB cable to connect the DST-i to the PC.
- Turn ON the mode switch of the DST-i. Please check that the power indicator lights up.

Select function screen



SMU-10009

- Click <1> “Reading Driving Recorder” on the select function screen to display the item selection screen.



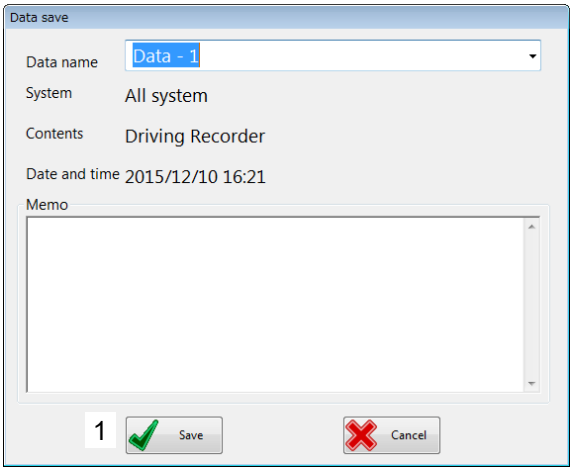
SMU-10010

- After selecting an item from the item selection screen, click <1> “Select” to display the screen for the selected item.

To read data from the SD card slot of the DST-i

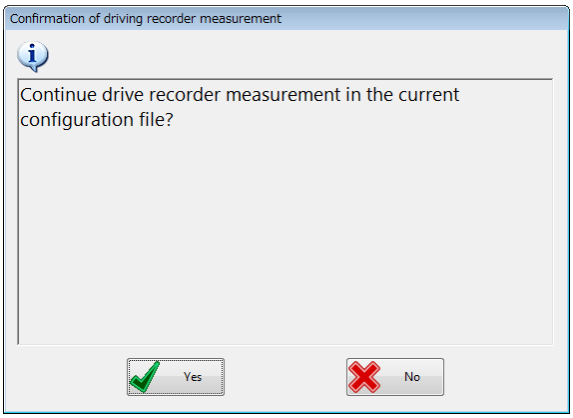
- If you click “Measurement data conversation save (read from DST-i)” in the Driving recorder items list, the Data save screen appears.

Data save screen



SMU-10011

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a new project and close the screen.
- This causes the message shown below to appear. To continue using the current setting file for sampling, click the “Yes” button. To delete the current setting file and stop sampling, click the “No” button.



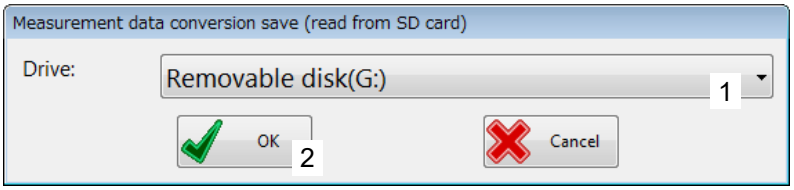
SMU-10012

To read data from a card slot of the PC

Notes

- Use an external SD card reader if the your computer does not have an SD card slot.

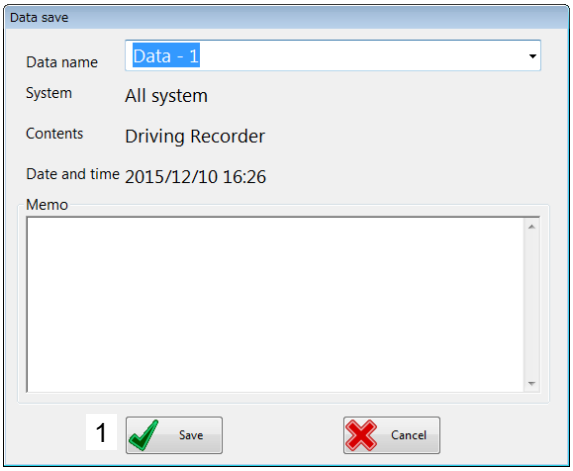
- If you click “Measurement data conversion save (read from SD card)” in the Driving recorder items list, the Drive selection screen appears.



SMU-10013

- On the Drive selection screen, if you select <1> the drive for readout and click <2> “OK”, the Data save screen appears. (Here “Removable disk (G:)” is selected.)

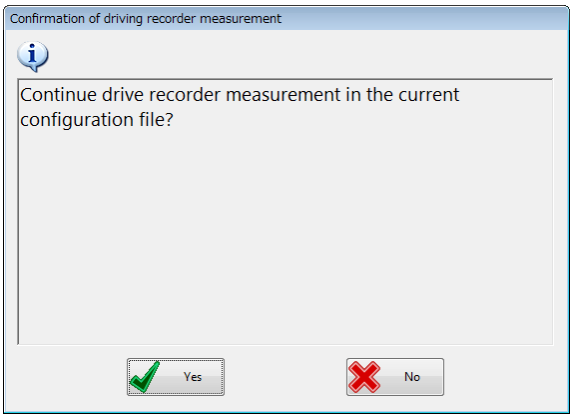
Data save screen



SMU-10014

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a new project and close the screen.

- This causes the message shown below to appear. To continue using the current setting file for sampling, click the “Yes” button. To delete the current setting file and stop sampling, click the “No” button.

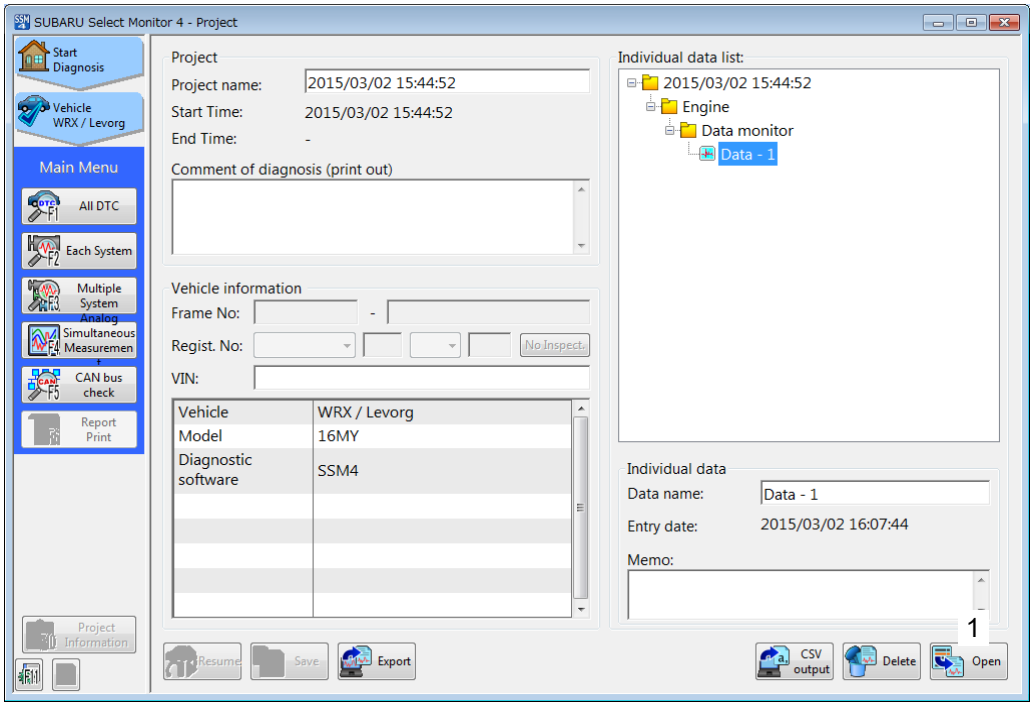


SMU-10015

13-3-5. Loading SDR data

- The SDR data that has been read out from the SD card is saved to a new project. The SDR data can be reproduced from “Project reproduction” on the main menu screen.
- The screen displays and operation are mostly the same as that for the “Data monitor”.

Project screen



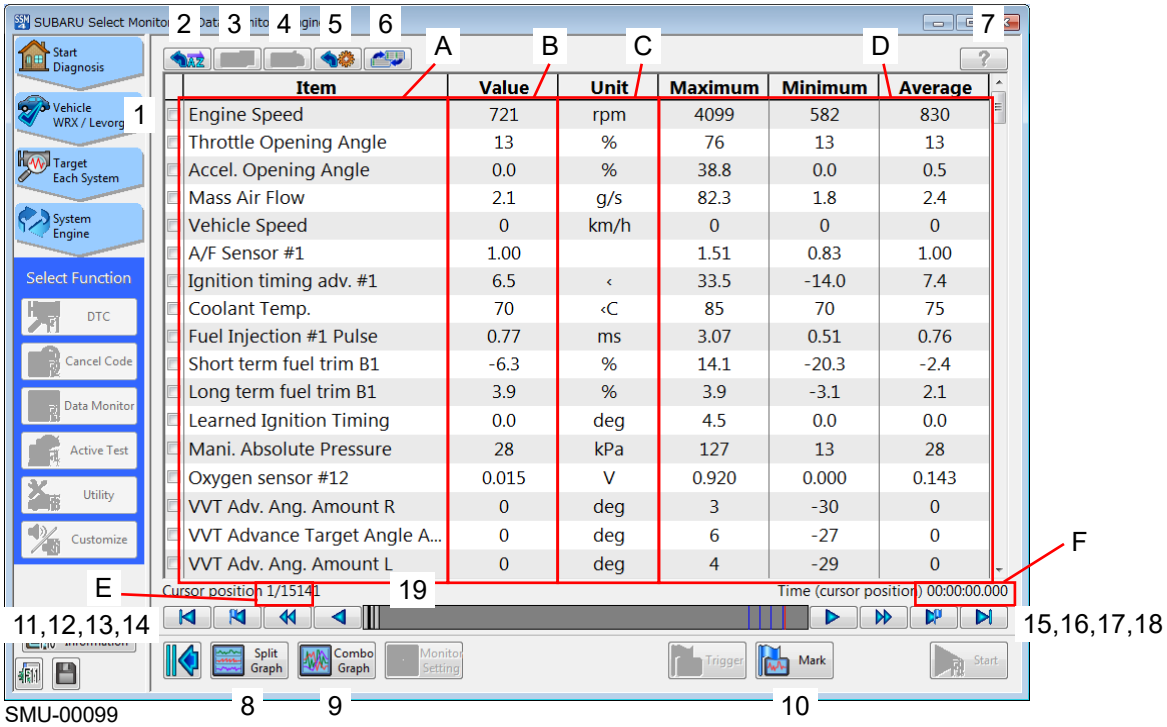
SMU-00098

- Double-click on the desired individual data monitor file from the individual data file list on the project screen or select the desired data and click <1> “Open” to display the load data screen.

Notes

- The saved data monitor data is under the “Data monitor” in the individual data list.

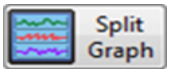
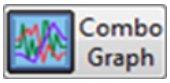
Load data screen (List display)



SMU-00099

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Maximum, minimum, average	This displays the maximum, minimum, and average values for all data.
E	Cursor position	This displays the current cursor position and total number of samples.
F	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

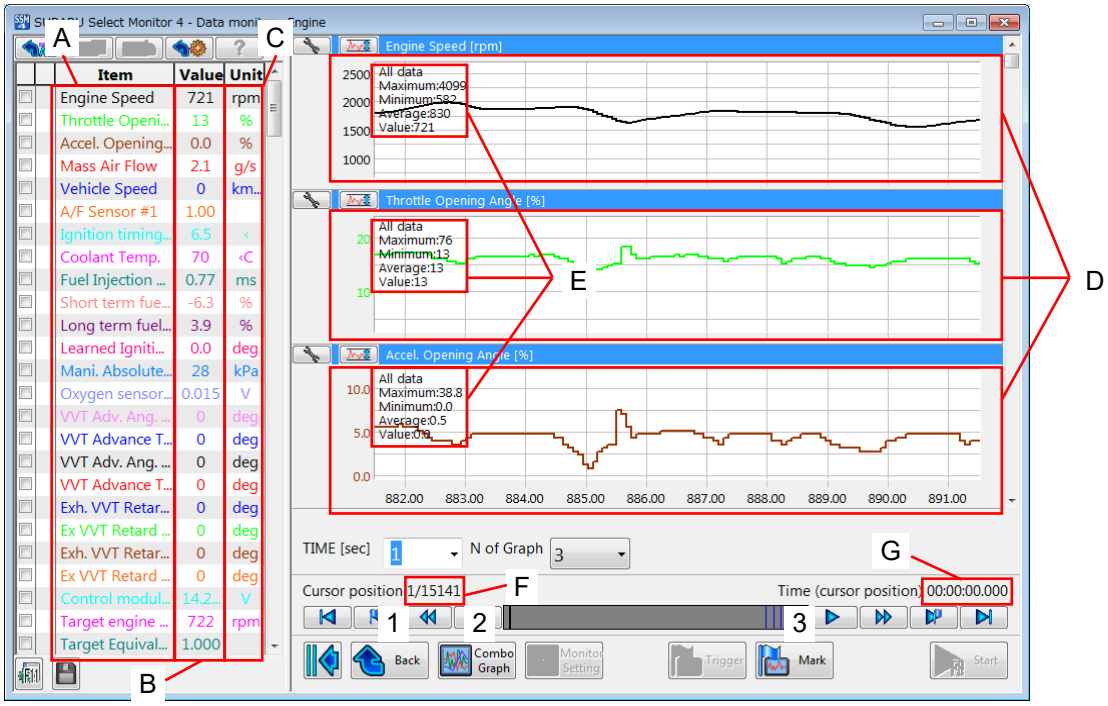
1		Click to display the check box to select. Click again to deselect.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Items with deselected check boxes are not displayed. Parameters not displayed are not removed from signal groups.
4		This displays all undisplayed items.
5		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
6		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
7		This displays usable keyboard operations for the displayed screen.
8		This displays the load data screen (Split graph display).
9		This displays the load data screen (Combo graph display).
10		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark.
11		This moves to the beginning of the scroll bar.
12		This moves to the next marked position on the left.
13		This moves the data position (sampling unit) one graduation to the right.
14		This moves data position (sampling unit) one data point to the left.
15		This moves data position (sampling unit) one data point to the right.
16		This moves the data position (sampling unit) one graduation to the right.
17		This moves to the next marked position on the right.
18		This moves to the end of the scroll bar.
19		This enables you to adjust the amount of time (width) displayed on one graph display screen by stretching the end of the scroll bar as desired. The display does not change when stretching the scroll bar on the list display screen.

Notes

- Starting and stopping measuring as well as starting triggering cannot be performed on the load data screen.

- Click either <7> “Split Graph” on the load data screen (List display) or <10> “Split Graph” on the load data screen (Combo graph display) to display the load data screen (Split graph display).

Load data screen (Split graph display)

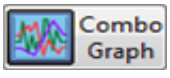


SMU-00100

Screen layout

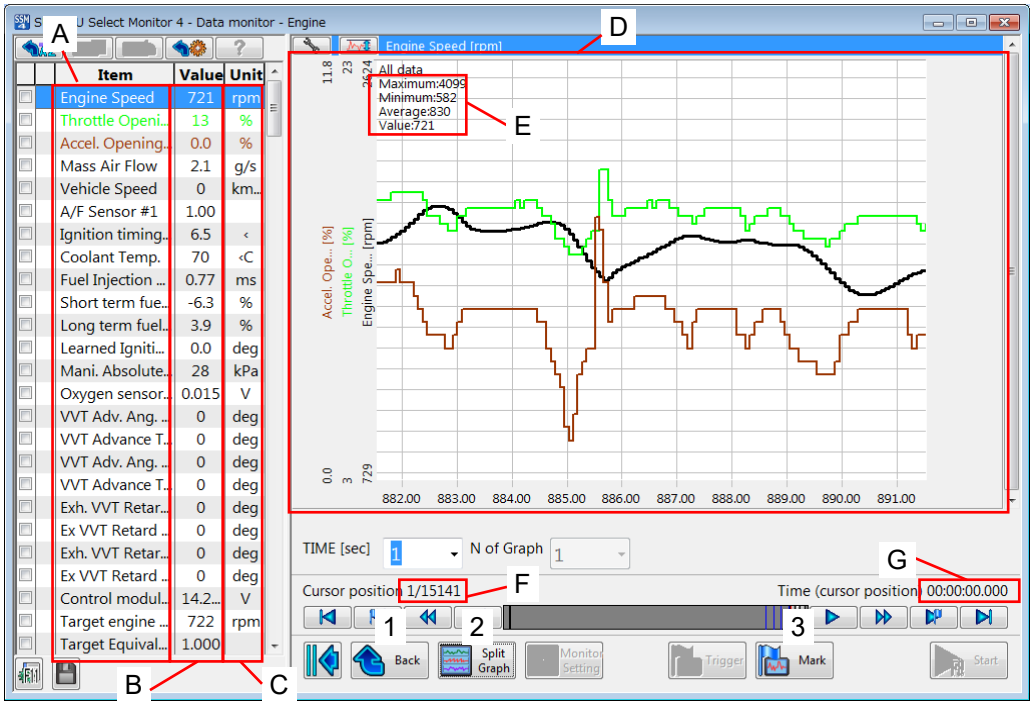
A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays all signal graphs for displayed items. This enables you to change the display order by dragging and dropping the graph windows.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

Operating instructions

1		This returns the display to the list display screen.
2		This displays the load data screen (Combo graph display). Refer to “11-6. Combo graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark.

- Click either <8> “Combo Graph” on the load data screen (List display) or <11> “Combo Graph” on the load data screen (Split graph display) to display the load data screen (Combo graph display).

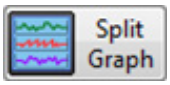
Load data screen (Combo graph display)



SMU-00101

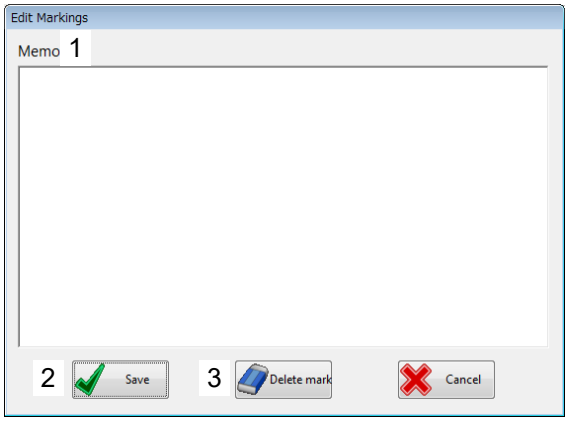
Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

1		This returns the display to the list display screen.
2		This displays the load data screen (Split graph display). Refer to “11-5. Split graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark.

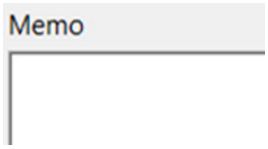
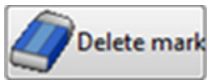
- Click “Mark” on the load data screen to display the mark settings screen.

Mark settings screen



SMU-00102

Operating instructions

1		This enables you to enter notes to marked positions.
2		This saves mark information. This creates a new mark if the position is not currently marked. If the position is currently marked, the note information is overwritten.
3		This deletes the mark. The operation of this button is only effective when “Mark” is clicked at a marked position.

Notes

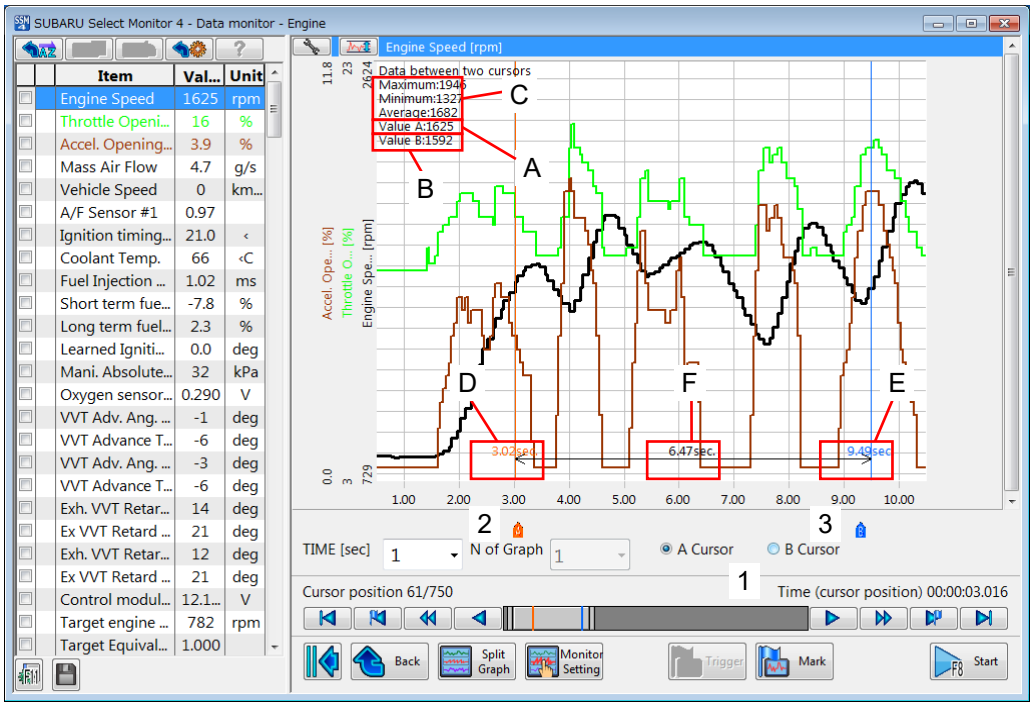
- The confirm data overwrite screen displays if you try to close the data monitor without saving after changes were made to the display state.

13-3-6. 2-cursor analysis

2-cursor analysis enables you to add the values of any two points of measured data and the maximum, minimum, and average values between these two points.

- Click the - “2-cursor analysis” on the split graph display screen or combo graph display screen to display the 2-cursor analysis screen.

2-cursor analysis screen

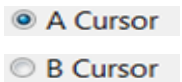


SMU-00103

Screen layout

A	Value A: *	This displays the signal value at the A cursor position.
B	Value B: *	This displays the signal value at the B cursor position.
C	Maximum:* Minimum:* Average:*	This displays the maximum, minimum, and average values between the two cursor positions.
D	*.** sec. (red characters)	This displays the time for the A cursor position.
E	*.** sec. (blue characters)	This displays the time for the B cursor position.
F	*.** sec. (black characters)	This displays the difference in time between the two cursor positions.

Operating instructions

1		This switches over the selection of the main cursor. This displays the signal value or information on cursor positions according to the position of the selected main cursor.
2		Drag the icon to move the position of cursor A.
3		Drag the icon to move the position of cursor B.

Data Cut-and-Save

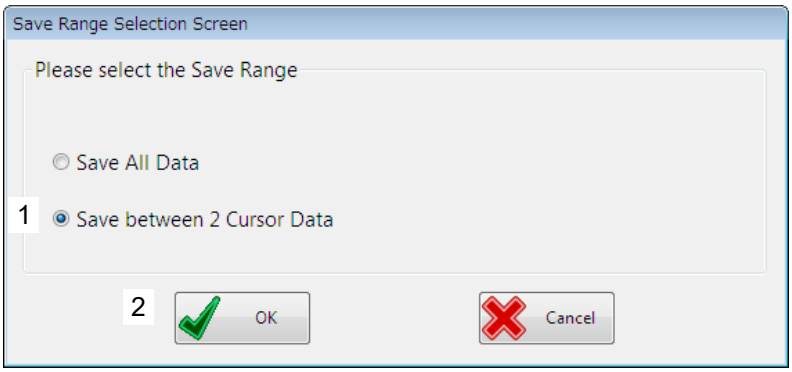
Data cut-and-save can be used in the digital data screen, and either of the Split graph display screen or Combo graph display screen. (The following explanation is for the Combo graph display screen.)

2-cursor analysis screen

SMU-00213

- Click on <1> at the bottom left of the 2 cursor analysis screen. Save Range Selection Screen is displayed.

Save range selection screen



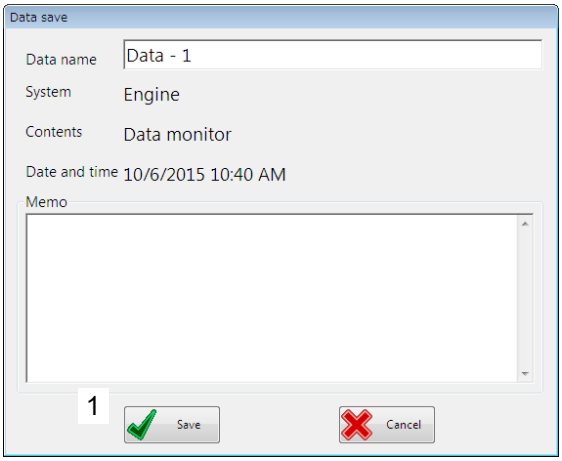
SMU-00214

- Please put the check in the <1> “Save between 2 cursor Data” in save range selection screen. When you click <2> “OK”, the Data Save Screen is displayed.

Notes

- If you select “Save All data” at this time, cut-and save will not be performed, and all sampled data will be saved.

Data save screen



SMU-00215

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

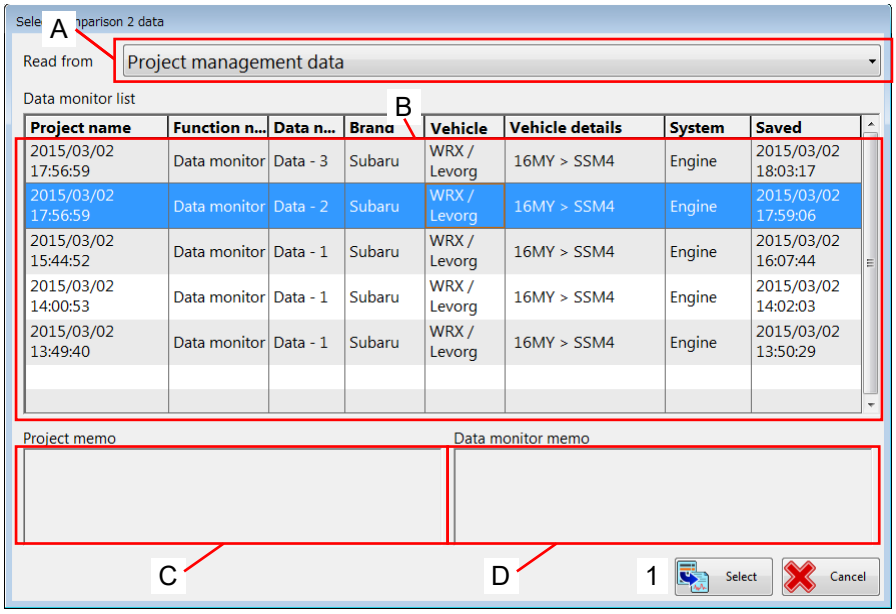
Notes

- If you want to save only the trimmed data as a file, please save by selecting only the relevant data in the export of the project screen.

13-3-7. Data comparison

- From the button, click “Function” and then “Data comparison” to display the select second type of data for comparison screen.

Select second type of data for comparison screen



SMU-00104

Screen layout

A	Read from	This is a pull-down menu for selecting the project to load.
B	Data monitor list	This displays a list of projects stored in the particular folder and that contain comparable individual data (measured data from the data monitor). All individual data in the project are displayed when there are multiple individual data files that can be compared in the same project name.
C	Project memo	This field displays entered notes such as supplementary information on projects. Nothing is displayed if no memo have been entered.
D	Data monitor memo	This field displays entered notes such as supplementary information on individual data. Nothing is displayed if no memo have been entered.

- After selecting individual data from the <B> data monitor list, click <1> “Select” to display the data comparison screen.

Data comparison screen

SMU-00105

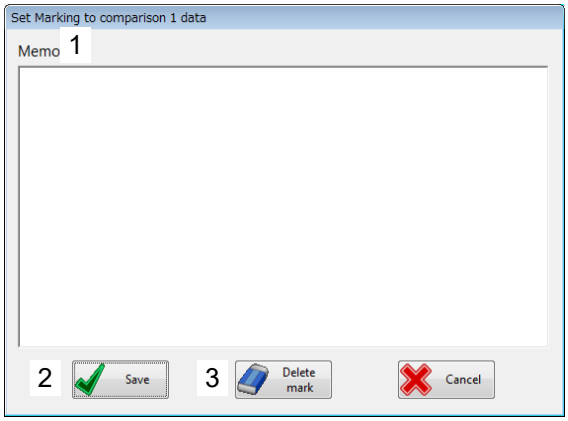
Screen layout

A	List display	This displays the items of which the data monitor item names match between the playback data and comparison data. “-” is displayed when the parameter is not present in either set of data.
B	Playback data	This displays a graph of the playback data.
C	Comparison data	This displays a graph of the comparison data.
D	Cursor position	This displays the current cursor position and total number of samples.
E	Elapsed time	This displays the elapsed time from the start of measuring to the current cursor position.

1		The graph range of items selected on the list display is automatically configured.
2		This returns to the screen before executing “Data comparison”.
3		This adds a mark to the playback data graph. Click this at the marked position to add or change notes for the mark or delete the mark. The mark and line is displayed in blue.
4		This adds a mark to the comparison data graph. Click this at the marked position to add or change notes for the mark or delete the mark. The mark and line is displayed in green.
5		When this check box is selected, the cursor movement, scroll bar width and scroll bar movement of the playback data and comparison data are synchronized.
6		This moves to the beginning of the scroll bar. (playback data)
7		This moves to the next marked position on the left. (playback data)
8		This moves the data position (sampling unit) one graduation to the left. (playback data)
9		This moves data position (sampling unit) one data point to the left. (playback data)
10		This moves data position (sampling unit) one data point to the right. (playback data)
11		This moves the data position (sampling unit) one graduation to the right. (playback data)
12		This moves to the next marked position on the right. (playback data)
13		This moves to the end of the scroll bar. (playback data)
14		This moves to the beginning of the scroll bar. (comparison data)
15		This moves to the next marked position on the left. (comparison data)
16		This moves the data position (sampling unit) one graduation to the left. (comparison data)
17		This moves data position (sampling unit) one data point to the left. (comparison data)
18		This moves data position (sampling unit) one data point to the right. (comparison data)
19		This moves the data position (sampling unit) one graduation to the right. (comparison data)
20		This moves to the next marked position on the right. (comparison data)
21		This moves to the end of the scroll bar. (comparison data)
22		This enables you to adjust the amount of time (width) displayed on one graph display screen by stretching the end of the scroll bar as desired.

- Click “Mark (Comp1)” or “Mark (Comp2)” on the comparison data screen to display the mark settings screen.

Mark settings screen



SMU-00106

Operating instructions

1	Memo	This enables you to enter notes to marked positions.
2	Save	This saves mark information. This creates a new mark if the position is not currently marked. If the position is currently marked, the note information is overwritten.
3	Delete mark	This deletes the mark. The operation of this button is only effective when “Mark” is clicked at a marked position.

Notes

- The confirm data overwrite screen displays if you try to close the data monitor without saving after changes were made to the display state.

13-3-8. Date and time setting

Date and time of the DST-i built-in clock can be set.

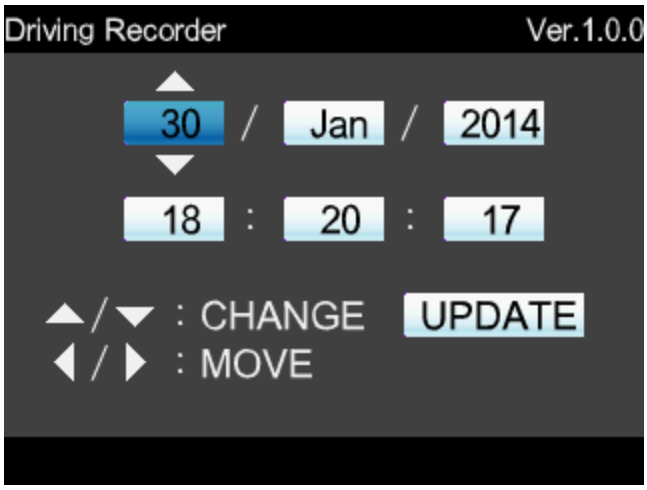
Notes

- When leave DST-i for a long term, you can set the reset date and time.
- You write in the configuration file for SDR at an SD card. The date and time are set automatically.

- Move to the item to set with the DST-i “RIGHT” or “LEFT” key, and set an arbitrary value with the DST-i “UP” or “DOWN” key.
- After setting, select “UPDATE” and press the DST-i “A” key.

Notes

- When you cancel setting, please datalink cable disconnect from a vehicle data link connector, or select “STScreen” in DST-I and please push the “A” key.

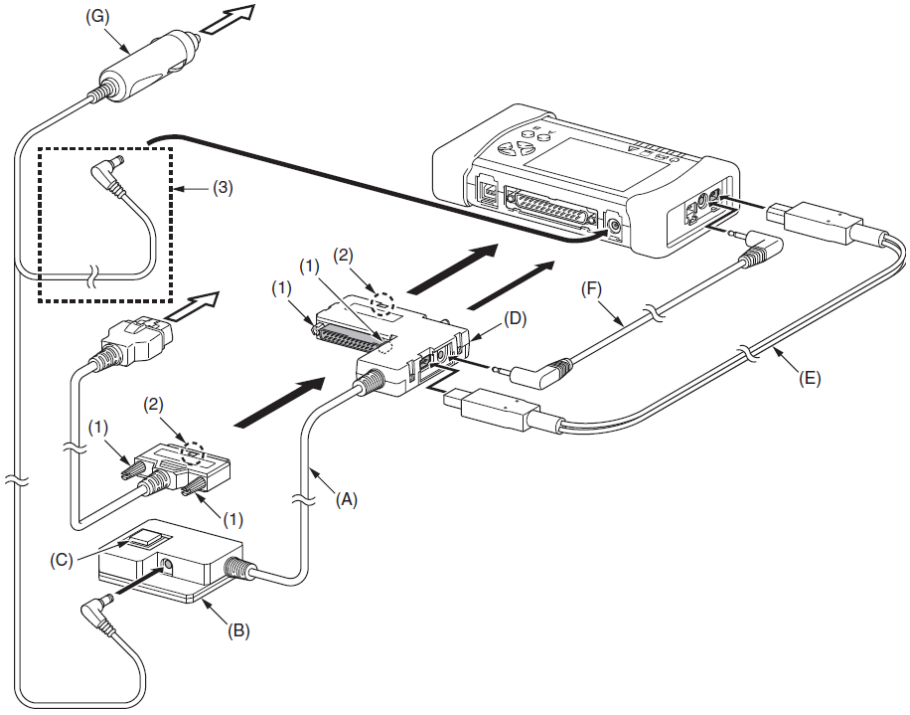


SMU-10017

13-4. Switch box cable set / DC power cable for cigarette lighter socket

With the use of optional switch box cable set and DC power cable for cigarette lighter socket, power to the DST-i can be turned ON. If this power ON function is used with the driving recorder, you can avoid missing measurement data because you forgot to turn on power to the DST-i.

13-4-1. Names of Parts and Connection method



SMU-10020

A：Switch box cable

B：Switch box

C：Trigger switch

D：Switch box adapter

E：Analog cable

F：Trigger cable

G：DC power cable for cigarette lighter socket

1：Tighten with screws.

2：Notch (Center)

3：In the case of the switch box cable set unused.

Notes

- The switch box cable set does not come with the (G) DC power cable for cigarette lighter socket.
- The switch box cable set cannot be used simultaneously with the 4-channel adapter set (Part No.95171-12740).
- Although the switch box cable set cannot be used simultaneously with ADAPTOR ASSY,D-SUB CONNECTOR (Part No.95171-13170), the switch box cable handles the roles of ADAPTOR ASSY,D-SUB CONNECTOR.

13-4-2. Function

DST-i Auto power on

If you perform the following operation, power to the DST-i can be turned ON without setting the mode switch of the DST-i in the ON position.

Notes

- This function is important when the driving recorder function is used to sample data at the engine is started.
- When you use this function, the mode switch of the DST-i should be in the OFF position.

- Switch operation

  By pressing the trigger switch (C), you can turn ON power to the DST-i.

- Detection of accessory power activation

  With the connection of the DC power cable for cigarette lighter socket, power to the DST-i can be turned ON when accessory power is turned ON.

- Vibration detection

  If the door is opened/closed after setting the switch box in the door pocket, etc., the output voltage of the G sensor built in the switch box is detected and power to the DST-i is automatically turned ON.

DST-i driving recording startup options

Situation	Startup action	Mode switch position
DST-i by itself	When the mode switch is set in the ON position	-
When connected to the switch box via the switch box cable kit	When the mode switch is set in the ON position	-
	When vibrations are detected in the switch box	OFF
	When the trigger switch is pressed	OFF
When connected to the switch box via the cigarette lighter socket	When the mode switch is set in the ON position	-
	When the vehicle accessory power is turned ON	OFF

Marking and Save

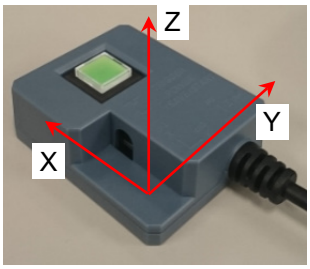
In the driving recorder mode, if you press the trigger switch of the switch box, you can mark SDR data during measurement. If you press and hold the trigger switch of the switch box, the SDR data can be saved on the SD card of the DST-i during measurement.

Sampling of G Sensor Analog Output

The output voltage of X-, Y- and Z-axis of the G sensor built in the switch box can be independently measured. During measurement, make sure that the switch box is securely immobilized in a horizontal or vertical posture in the vehicle.
Moreover, it is necessary to add the analog measurement items on the Select signal screen. As the input range, select a “G sensor”.
The output destination channel of each G sensor is as follows.
CH2: X-axis output
CH3: Y-axis output
CH4: Z-axis output

Notes

- For the direction of detection of G sensor acceleration, the arrow direction on the X-, Y- and Z-axis indicated on the switch box is output as the + (plus) side.



SMJ-10021

Notes

- Input the following values in the conversion rate and offset columns in the analog settings if you want to display G sensor output values as physical quantity (unit: G):
  Conversion rate: 1.515
  Offset: -2.5
  Unit: G

14. Customize

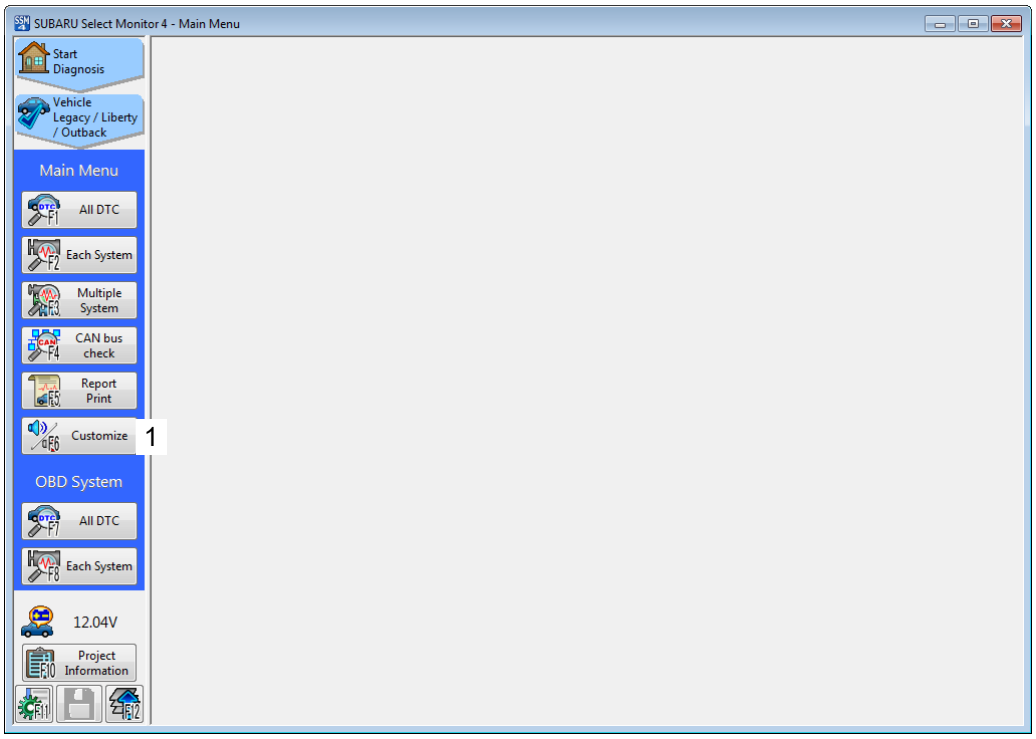
This enables you to configure the operation details, operation time, and so on for the actuator controlled by the “Body control” or other control module.

Caution

- Refer to the service manual when making configurations.
  Incorrect settings may cause failures such as incorrect operation of the actuator.

14-1. Select system

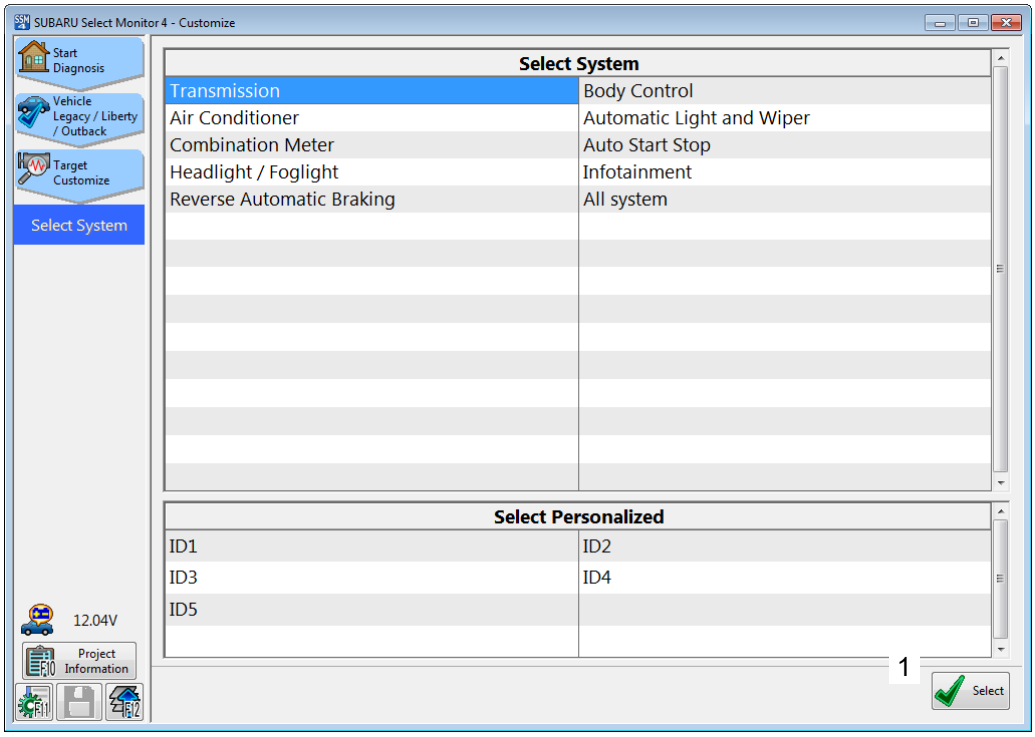
Main menu screen



SMU-10058

- Click <1> “Customize” on the main menu screen to display the select system screen.

Select system screen



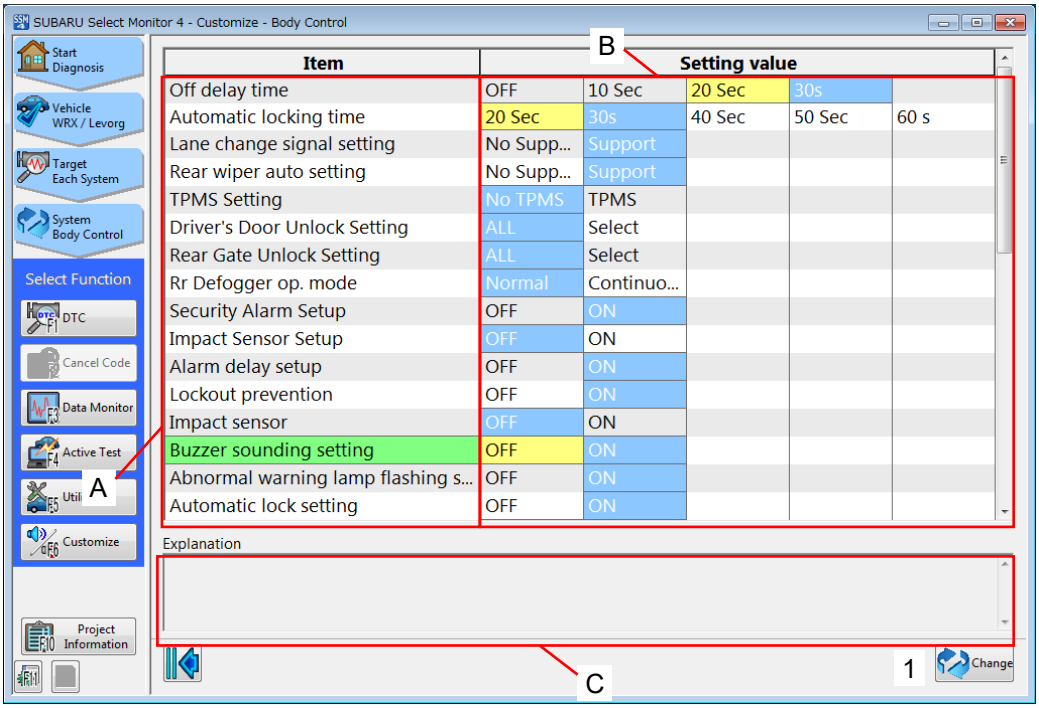
SMU-10059

- Double-click the system you want to diagnose from the system list on the select system screen or select the select and click <1> “Select” to display the customize screen.

Notes

- Selecting “All system” displays all items that can be customized with that vehicle on the Customize screen.
- The following example in which “Body control” option is selected on the select system screen will be described.

Customize screen



SMU-00137

Notes

- If the vehicle ECU is in the factory mode, a message confirming the destination displays.
  To change the destination, enter the 4-alphabetic character code.
  Set the ECU to the production mode to complete the customization.

Screen layout

A	Item	This displays the name of items. Select the item name of setting value to display the selected parameter in green.
B	Setting value	This displays the setting value for each item. This displays the current setting value in blue. Values being edited are displayed in yellow.
C	Explanation	This displays detailed information for the selected items. Detailed information may not be displayed depending on the selected item.

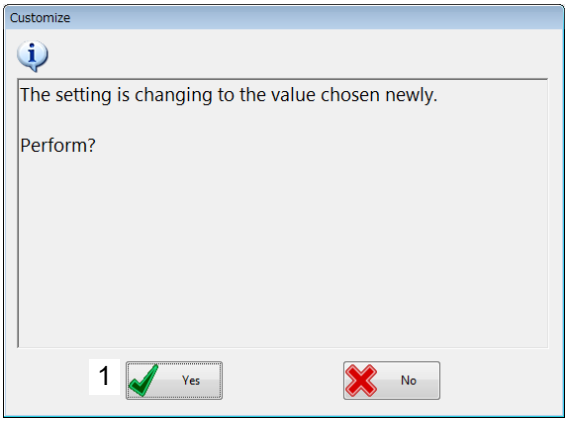
Notes

- Click a setting value to highlight this value in yellow.
  Click the same area again to return the setting to the value before being edited.

- After changing the setting value on the customize screen, click <1> "Change" to display the confirm changes screen.

Notes
- <1> “Change” cannot be clicked if no items have been changed.

Confirm changes screen



SMU-00138

- Click <1> “Yes” on the confirm changes screen to change the setting and display the customize screen.

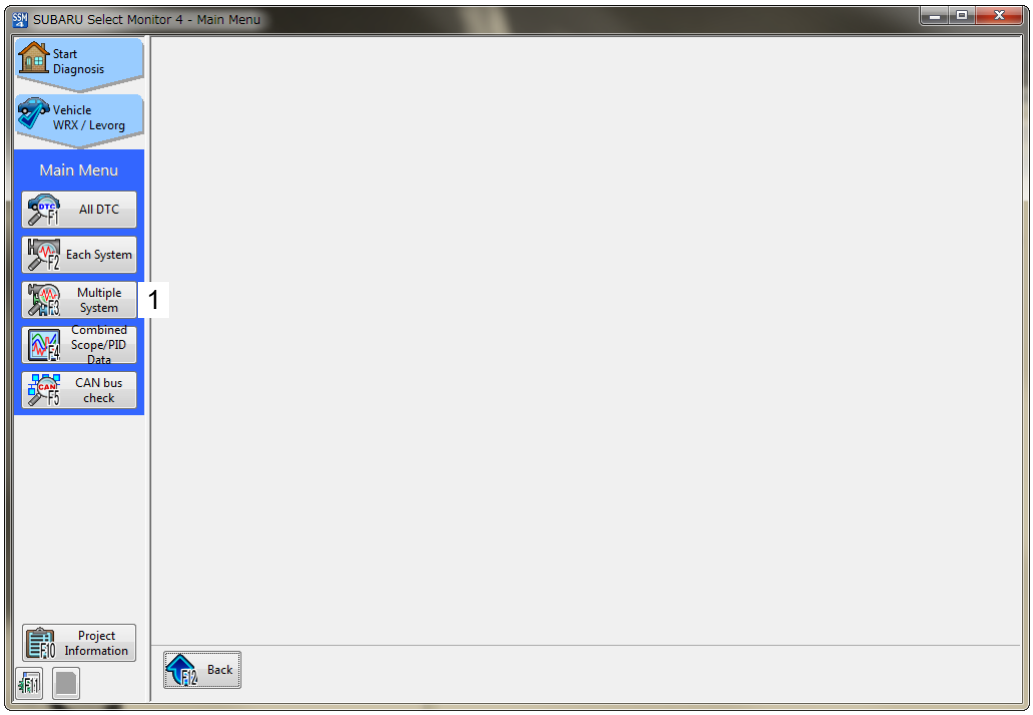
Notes
- The setting value that was displayed in yellow before being changed is displayed in blue on the customize screen after the change has been made.

15. Multiple system inspections

This enables you to measure both control data and input and output data into/from the control module in multiple control system compatible with SSM4 at the same time.

15-1. Select system

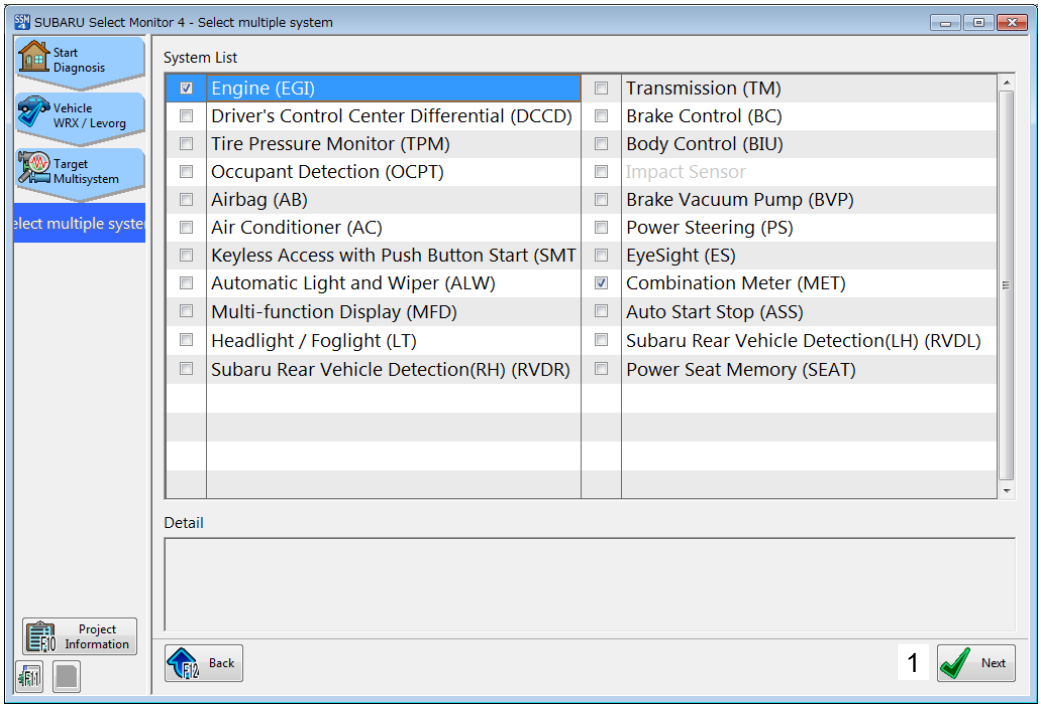
Main menu screen



SMU-00139

- Click <1> “Multiple System” on the main menu screen to display the select system screen.

Select system screen



SMU-00140

- Select the check box to the left of the system name you want to diagnose from the system list on the select system screen, and then click <1> "Next" to display the select function screen.

Notes

- Up to a maximum of three systems can be selected.
- Systems that do not support multiple inspection systems are grayed out or cannot be selected.
- The right side abbreviation of the system name is used only in SSM4.
  In the service manual and various service technical documentation, these abbreviations may not used.

16. Multiple data monitor

This enables you to measure control data and input and output data into/from the control module in the control system compatible with SSM4.

This enables you to display the digital data as well as display data in graphs.

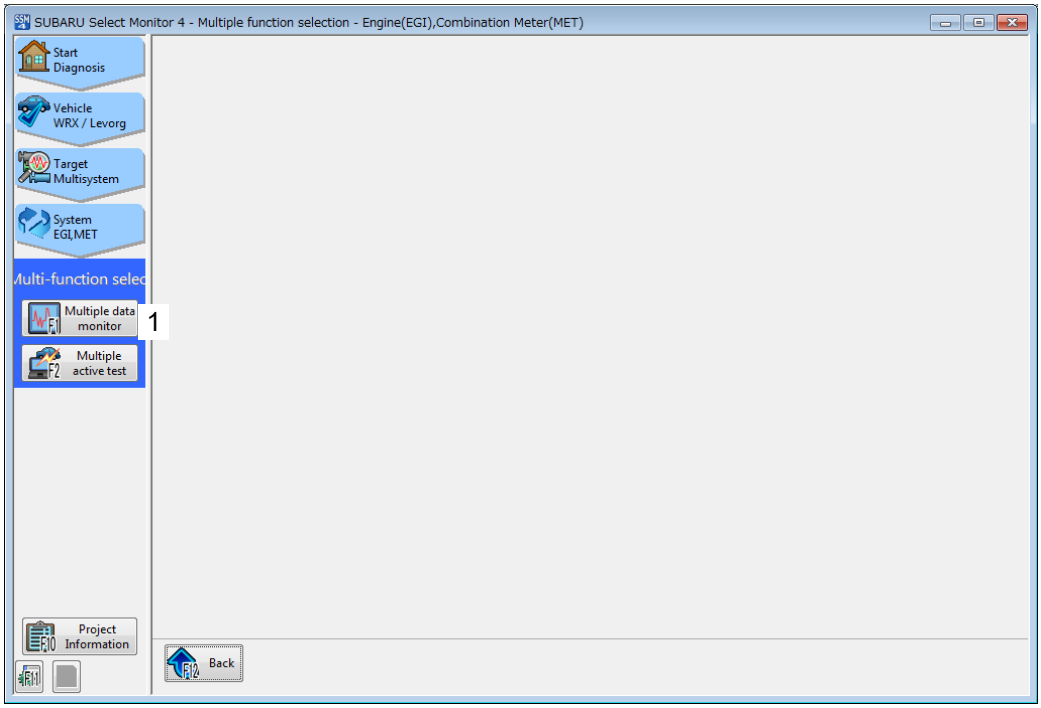
This enables you to monitor data from multiple systems simultaneously.

Notes

- The screen displays and operation are mostly the same as that for the “Data monitor”.
  The difference here is that system names (abbreviated symbols) are displayed together with signal names.

16-1. Select signals

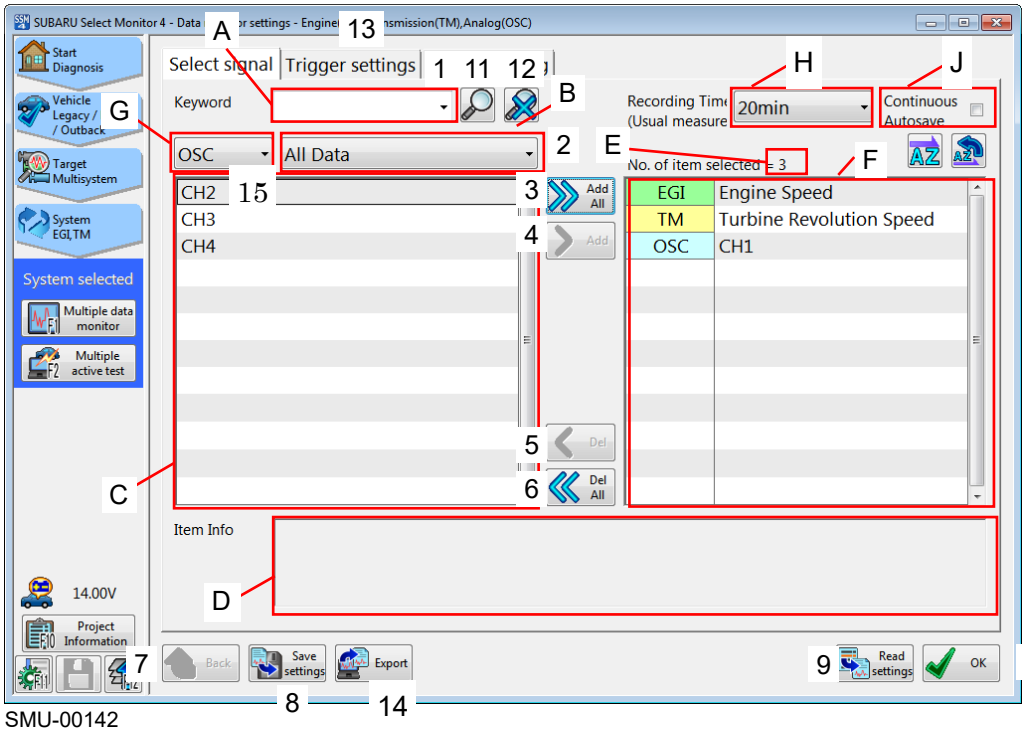
Select function screen



SMU-00141

- Click <1> “Multiple data monitor” on the select function screen to display the select signal screen.

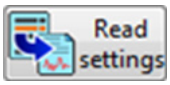
Select signal screen



SMU-00142

Screen layout

A	Keyword	This field is where keywords used to filter signals are entered. This enables you to select previously entered keywords from the pull-down menu.
B	Signal group	This is a pull-down menu used to select signal groups.
C	List of selectable signals	This displays measurable signals by the system during diagnostics. The signals displayed differ depending on the selected signal group.
D	Item Info	This displays information on signals selected from the list of selectable signals. Item information may not be displayed depending on the selected signal.
E	No. of item selected	This displays the number of signal items displayed in the list of selected signals.
F	List of selected signals	This displays the signals selected from the list of selectable signals.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.
H	REC Time (Normal)	This pull-down menu is for setting the maximum logging time allowed per data monitoring measurement.
J	Continuous Autosave	By placing a checkmark in the checkbox, data is repeatedly and automatically saved and remeasured during the set maximum logging time. Enable this option to log monitored data beyond the maximum logging time.

1		This is used to filter the display of signals containing keywords. Enter a keyword or select one from the pull-down menu and then click <11> to filter signals. Click <12> to remove the filter.
2		Signals registered in signal groups selected from the pull-down menu are displayed in the list of selectable signals. Selecting “All Data” displays all signals.
3		This adds measurable signals to the list of selected signals. The insufficient signal against the upper limit 150 of the number of signals should be added.
4		This adds selected signals to the list of selected signals. Multiple signals can be selected at the same time. The upper limit of the number of signals which can be added is 150.
5		This deletes selected signals to the list of selected signals. Multiple signals can be selected at the same time.
6		This removes signals from the list of selected signals.
7		This returns the system to the data monitor screen. You cannot return to the select function screen if “Multiple data monitor” on the select function screen is clicked while configuring the data monitor.
8		This saves the data monitor settings. This saves signal selections and trigger settings.
9		This loads saved data monitor settings.
10		This displays the data monitor screen.
14		Exports data monitoring settings as a file.
15		Signals registered under the system name selected from the pull-down menu are displayed in the “List of selectable signals”. Selecting “OSC” displays the channel for analog measurement.

Notes

- The signals displayed in the list of selectable signals when “All Data” is selected differ depending on the system used and the vehicle for which the data monitor is performed.
- Signal groups first registered for each system differ depending on the system and the vehicle for which the data monitor is performed.
- When “Custom list” displayed in the signal group pull-down menu is selected, the most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the list of selected signals.
- The most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the area displaying the list of selected signals.
- When performing the data monitor for the first time after installing SSM4, all signal names are displayed in the area that displays the list of selected signals. This cannot be changed. Measured signal names can be changed after loading the configuration file. Measured signals can be changed after the second time.

16-2. Trigger settings

This enables you to configure trigger detection conditions to apply triggers to automatically respond to measured signal values.

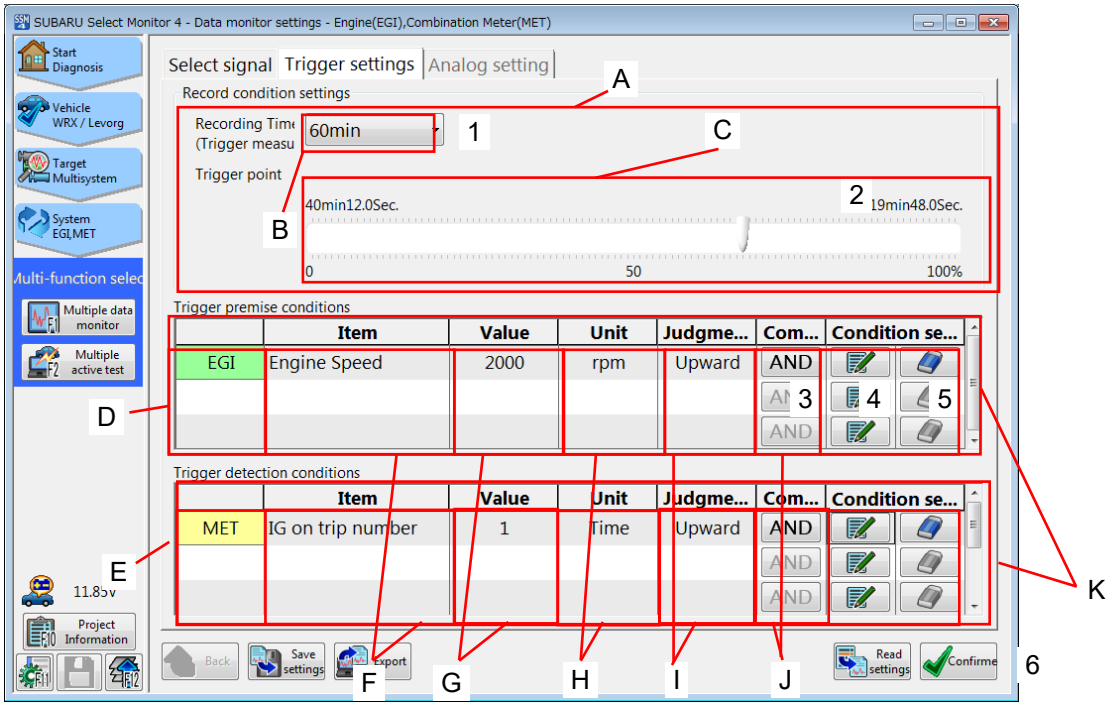
This enables you to configure different conditions for different signals and also configure conditional combinations.

- Click the <13> “Trigger settings” tab on the select signal screen to display the trigger settings screen.

Notes

- Configuring trigger detection conditions is not required to run the data monitor.
  In this case, click <10> “Confirmed” after selecting a signal on the select signal screen.

Trigger settings screen



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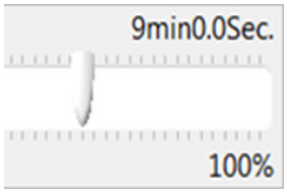
Screen layout

A	Record condition settings	This displays the configured recording conditions.
B	REC Time (Trigger)	This displays the data monitor record time.
C	Trigger point	This displays the trigger point. This displays the amount of record time before and after the timing of triggers. The position of the knob on the slider bar represents the trigger point.
D	Trigger premise conditions	This displays the trigger premise conditions. Triggers do not activate when only the detection conditions are satisfied when preconditions are configured. The preconditions must first be satisfied and then the detection conditions must be satisfied.
E	Trigger detection conditions	This displays the trigger detection conditions.
F	Item	This displays the name of signals for which conditions are configured.
G	Value	This displays the value functioning as the trigger condition.
H	Unit	This displays the unit of measure for each item.
I	Judgment conditions	This displays the judgment conditions for each item.
J	Combination	This displays the button to select the type of conditional combinations.

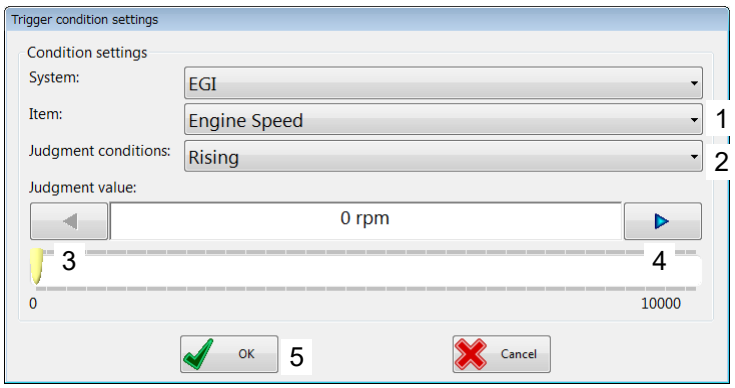
K	Condition setting	This displays buttons for condition settings.

Operating instructions

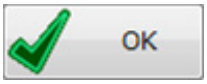
1		This changes the record time.
2		Move the slider bar knob to change the trigger point. This enables you to setup an estimated value in percentages displayed under the slider bar.
3		This sets the type of conditional combinations. Click to change between “AND” and “OR”.
4		This displays the configure trigger conditions screen. This enables you to configure trigger conditions for each signal.
5		This deletes trigger conditions for each signal.
6		This displays the data monitor screen.

- Click the <4> on the trigger settings screen to display the configure trigger conditions screen.

Configure trigger conditions screen



SMU-00144

1		This selects the name of signals for which trigger conditions are configured.
2		This changes the judgment conditions.
3		This lowers the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
4		This raises the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
5		This returns the display to the trigger settings screen.

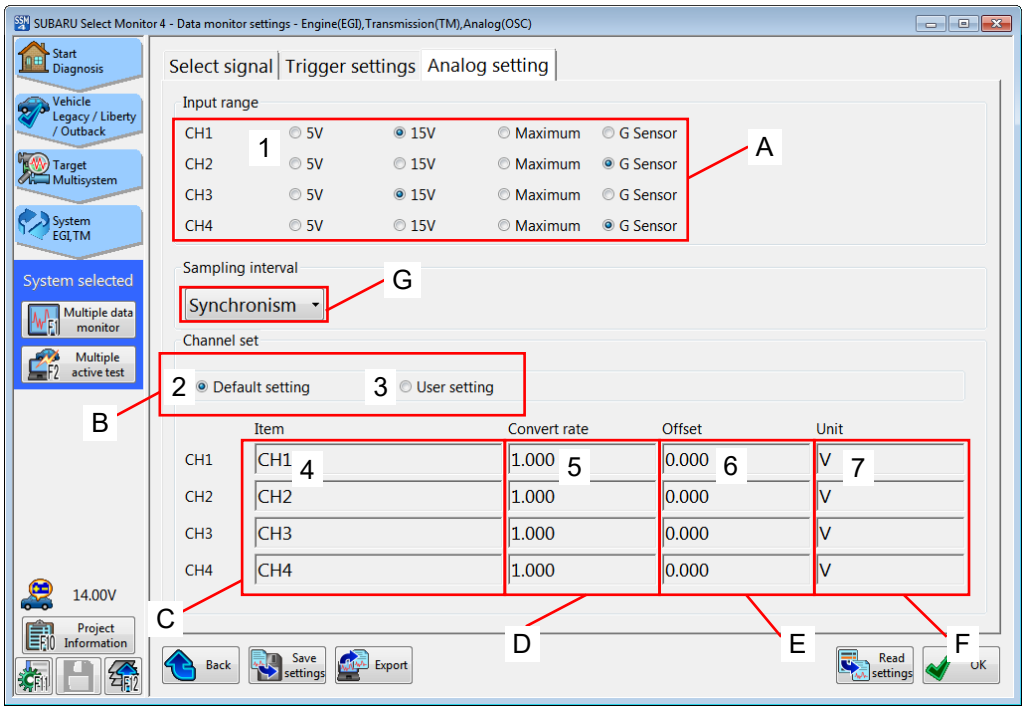
16-3. Analog settings

The analog settings includes input range and channel settings.

This also enables you to save configuration data and load saved configuration files.

- Click the <2> "Analog settings" tab on the select signal screen or the <1> "Analog settings" tab on the trigger settings screen to display the analog settings screen.

Analog settings screen



SMU-10044

Screen layout

A	Input range	This displays the input range for each channel. The input range is selected by clicking the radio button to the left of each item. The following ranges are available for each item. • 5 V: -5 V to +5 V • 15 V: -15 V to +15 V • Maximum: -150 V to +150 V • G sensor: -5V to +5V When measuring the G sensor output with the optional switch box cable, select a “G sensor”. If "G Sensor" is selected, the numeric values for physical quantity (unit: G) conversion are automatically entered in "Convert rate", "Offset" and "Unit ", to indicate the physical quantities (unit: G). The numeric values for physical quantity (unit: G) conversion are as follows. Convert rate : 1.515 Offset : -2.5 Unit : G The output destination channel of each G sensor is as follows. CH2: X-axis output CH3: Y-axis output CH4: Z-axis output Do not select the G sensor for CH1 because the switch box cable cannot physically connect to it.
B	Channel set	This displays the status of channel settings. The channel setting method is selected by clicking the radio button to the left of each item.
C	Item	This displays the channel name of each channel. This enables you to change this as desired.
D	Conversion rate	This displays the conversion rate for each channel. This displays values as they are measured in accordance with the multiplier configured for analog measured signal values.

E	Offset	This displays the offset value for each channel. This displays sum values as they are measured in accordance with the additional value configured for analog measured signals.
F	Unit	This displays the unit of measurement for each channel. The configured units are displayed on screen during measuring.
G	Sampling interval	Displays the signal sampling interval for analog measurements. Signals during analog measurements are sampled at the same interval as control module measurements, when "Synchronism" is selected.

Operating instructions

1		This enables you to select the input range for each channel.
2		Selecting this will return the “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel to their default settings. Item settings cannot be changed when the default settings are selected.
3		Selecting this enables you to change the settings of “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel.
4		Channel names can be entered as desired when “User settings” is selected.
5		The conversion rate value can be entered as desired when “User settings” is selected.
6		The offset value can be entered as desired when “User settings” is selected.
7		Units of measure can be entered as desired when “User settings” is selected.

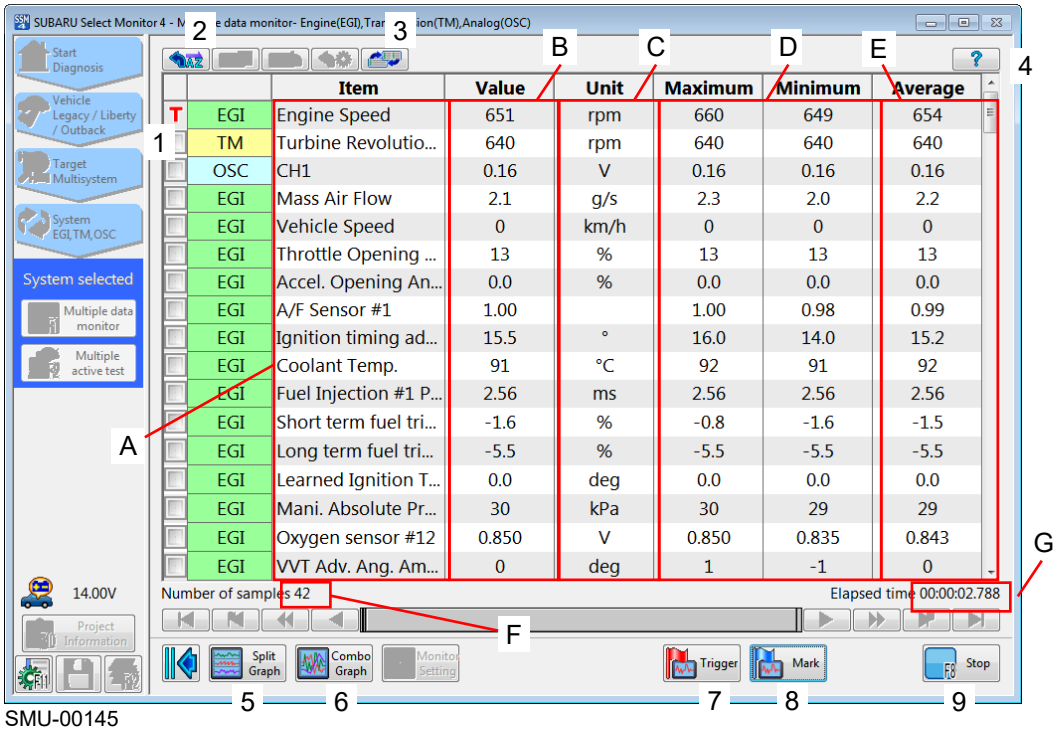
Notes

- If “analog setting” is grayed out and cannot be clicked, select “OSC” from “System name display area” on the signal selection screen, and add the analog measurement signal to the list of selected signals.
- All settings for analog measured signals (ch. 1-4) can be changed.
  Settings can be changed even when not selected on the select signal screen.

16-4. List display

After adding data monitor signals to the list of selected signals via the select signal screen, click “Confirmed” to display the list display screen and start measuring.

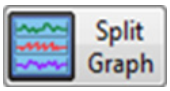
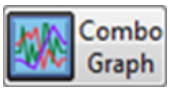
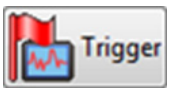
List display screen



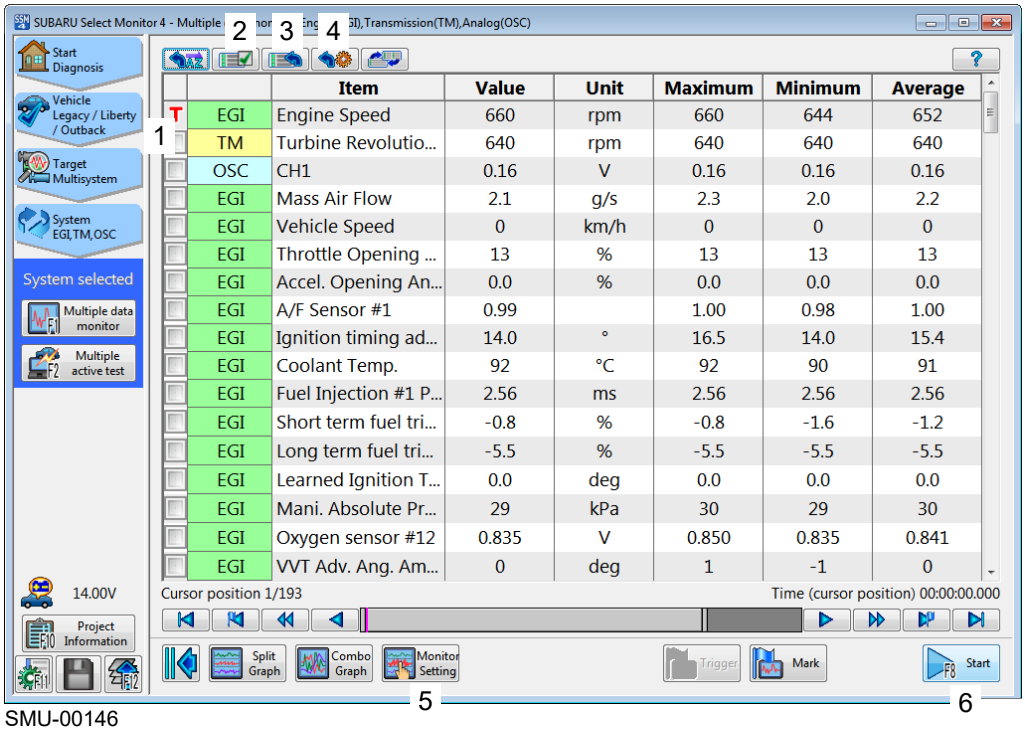
SMU-00145

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Maximum/Minimum	This displays the maximum/minimum values. The display updates when the maximum and minimum values change.
E	Average	This displays the average value over the time from the start of measuring to the current data point. The display updates when measured data is acquired.
F	Number of samples	This displays the number of samples currently acquired.
G	Elapsed time	This displays the elapsed time from the start of measuring.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
4		This displays usable keyboard operations for the displayed screen.
5		This displays the split graph display screen. Refer to “11-5. Split graph display” for more information.
6		This displays the combo graph display screen. Refer to “11-6. Combo graph display” for more information.
7		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
8		This adds a mark. You can also add the marking by pressing the numeric key or alphabetical key.
9		This stops measuring.

List display screen (while not measuring)



SMU-00146

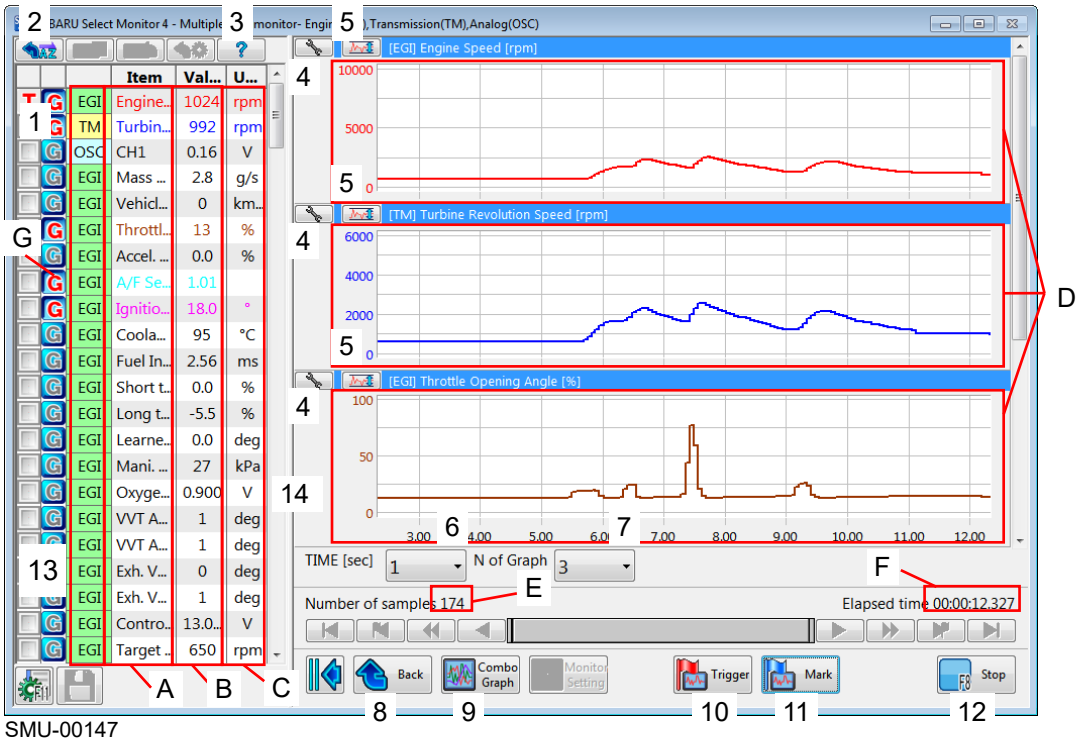
Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.

16-5. Split graph display

- Click either <7> "Split Graph" on the list display screen or <10> "Split Graph" on the combo graph display screen to display the split graph display screen.

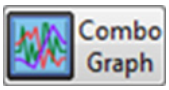
Split graph display screen



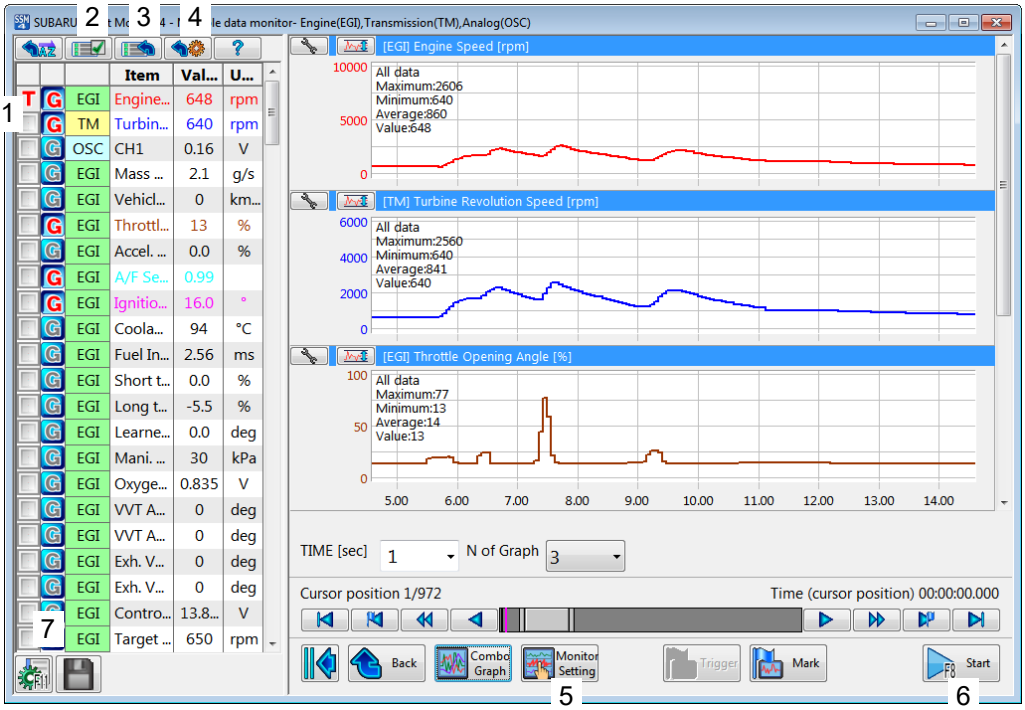
SMU-00147

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays signal graphs of the signals with display / not-display button pressed down for displayed items. Up to 150 signal graphs can be displayed. This enables you to change the display order by dragging and dropping the graph windows. This enables you to add the mark by clicking on the graph windows.
E	Number of samples	This displays the number of samples currently acquired.
F	Elapsed time	This displays the elapsed time from the start of measuring.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		This displays usable keyboard operations for the displayed screen.
4		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “11-7. Line graph settings” and “11-11. 2-cursor analysis” for more information.
5		This automatically configures the graph range. The applicable range can be configured with the “Graph settings”.
6		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
7		This configures the graph qty displayed together on one screen. This can set to a value between “1” and “7”.
8		This returns the display to the load data screen (List display).
9		This displays the combo graph display screen. Refer to “11-6. Combo graph display” for more information.
10		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
11		This adds a mark. This enables you to add the mark by clicking on the graph windows. You can also add the marking by pressing the numeric key or alphabetical key.
12		This stops measuring.
13		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.
14		This enables you to change the width of the item display area and graph display area by dragging the cursor to the right and left.

Split graph display screen (while not measuring)



SMU-00148

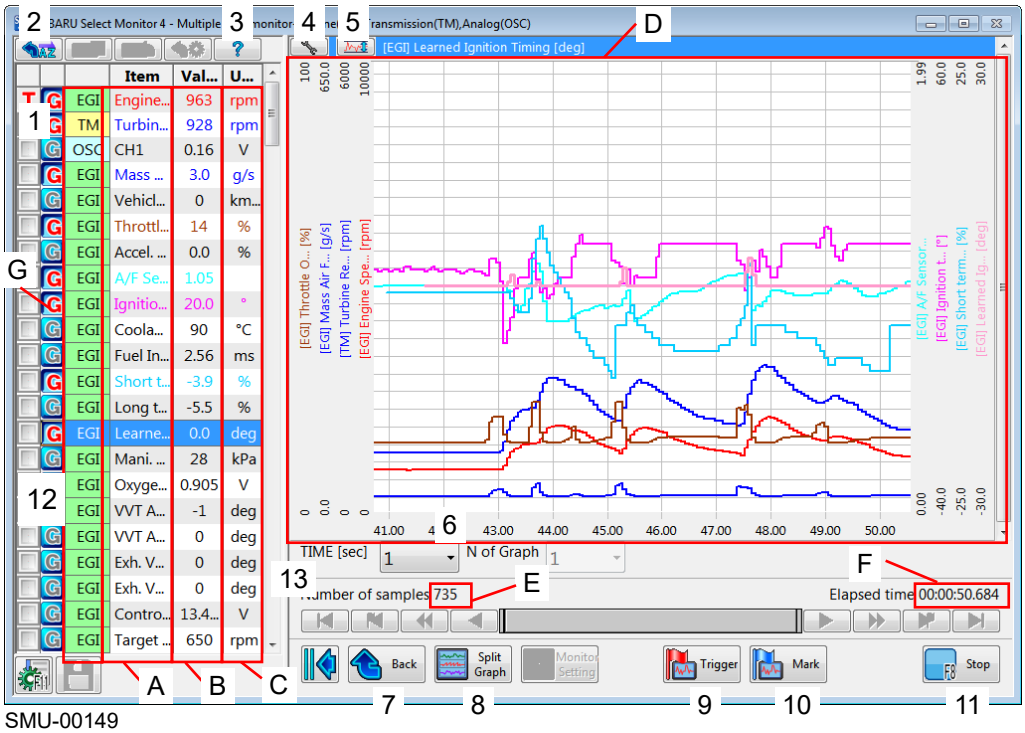
Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.
7		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

16-6. Combo graph display

- Click either <8> "Combo Graph" on the list display screen or <11> "Combo Graph" on the split graph display screen to display the combo graph display screen.

Combo graph display screen



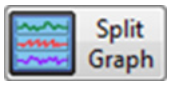
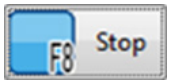
SMU-00149

Screen layout

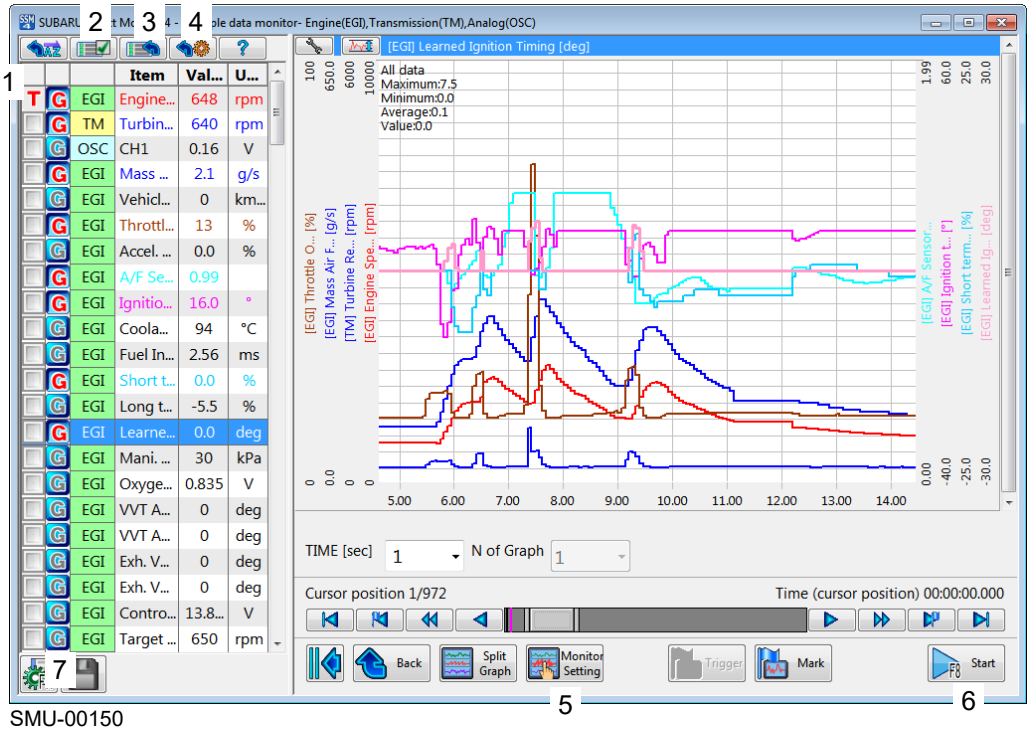
A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items. This enables you to add the mark by clicking on the graph windows.
E	Number of samples	This displays the number of samples currently acquired.
F	Elapsed time	This displays the elapsed time from the start of measuring.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

Notes

- The graph qty cannot be selected.
  The graph qty automatically changes between 1 or 2 depending on the number of items.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		This displays usable keyboard operations for the displayed screen.
4		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “11-7. Line graph settings” and “11-11. 2-cursor analysis” for more information.
5		The graph range of items selected on the list display is automatically configured. The applicable range can be configured with the “Graph settings”.
6		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
7		This returns the display to the load data screen (List display).
8		This displays the split graph display screen. Refer to “11-5. Split graph display” for more information.
9		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
10		This adds a mark. This enables you to add the mark by clicking on the graph windows. You can also add the marking by pressing the numeric key or alphabetical key.
11		This stops measuring.
12		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.
13		This enables you to change the width of the item display area and graph display area by dragging the cursor to the right and left.

Combo graph Display screen (while not measuring)



SMU-00150

Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.
7		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

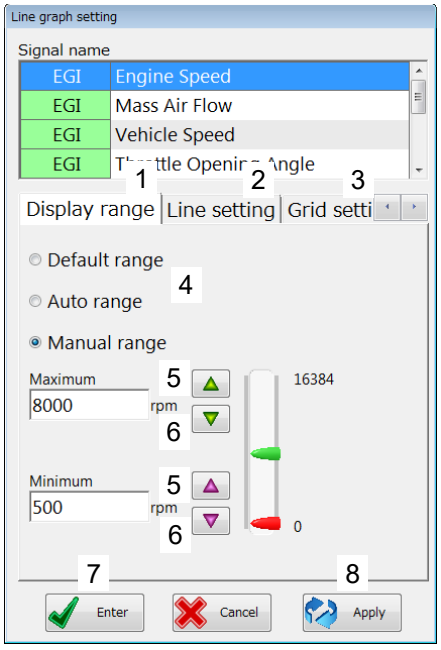
16-7. Line graph settings

- Click the - “Graph settings” on the split graph display screen or combo graph display screen to display the display range settings screen.

Notes

- This enables you to select signal names and configure each signal when changing the display from the combo graph display screen to the display range settings screen.

Display range settings screen



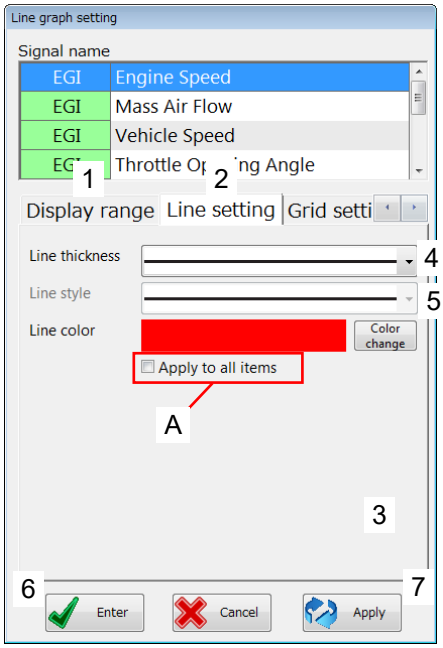
SMU-00095

Operating instructions

1	Line setting	This displays the line settings screen.
2	Grid setting	Displays a grid setup screen.
3	2 cursor	Displays a 2-cursor setup screen.
4	Default range Auto range Manual range	This selects the method to configure the graph range. The default range for value axis (vertical axis) of the graph is configured to the specified value of each signal. Auto range automatically configures the value axis of the graph on the basis of measured signal values. Configure the maximum and minimum values as desired for manual ranges. This cannot be configured for certain signals. Values can also be directly entered into text boxes.
5		Raises the maximum and minimum values. This also enables you to adjust the value with the slider bar.
6		Lowers the maximum and minimum values. This also enables you to adjust the value with the slider bar.
7	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.

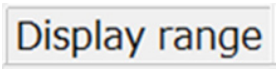
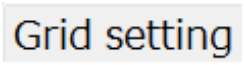
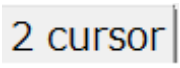
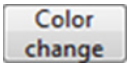
6		This confirms the changed settings.

Line settings screen

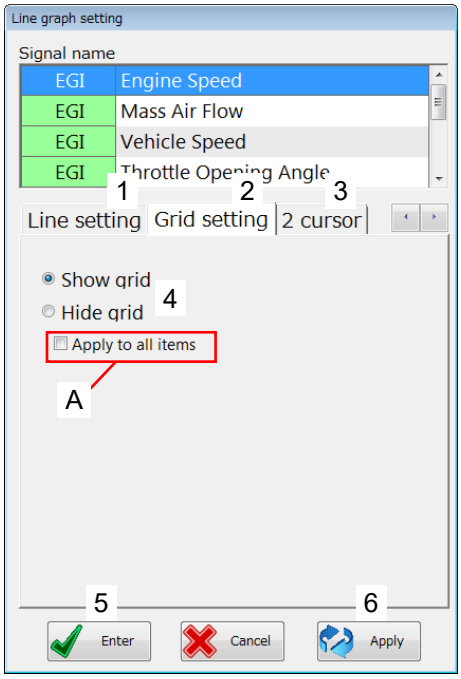


SMU-00096

Operating instructions

1		Displays a display range setup screen.
2		Displays a grid setup screen.
3		Displays a 2-cursor setup screen.
4		This changes the thickness and style of lines. Line styles can be selected only when the line width has been set to the thinnest option.
5		This changes the color of lines. Select the color from the color palette. If the <A> “Apply to all items” check box is selected, the selected line color applies to all signals.
6		This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
7		This confirms the changed settings.

Grid setup screen

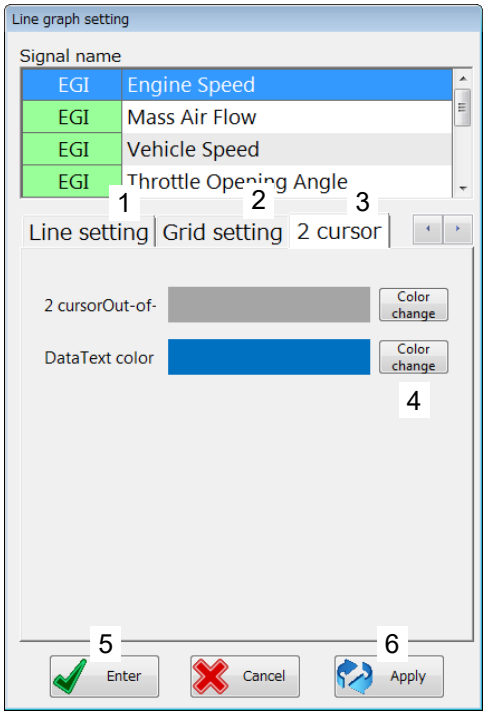


SMU-10042

Operating instructions

1	Display range	Displays a display range setup screen.
2	Line setting	Displays a line setup screen.
3	Grid setting	Displays a grid setup screen.
4	Show grid Hide grid	Sets whether to show or hide the grid on graph screens. Selected options are set for all signals when a checkmark is placed in the <A>"Apply to all signals" checkbox.
5	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
6	Application	This confirms the changed settings.

2-cursor setup screen



SMU-10043

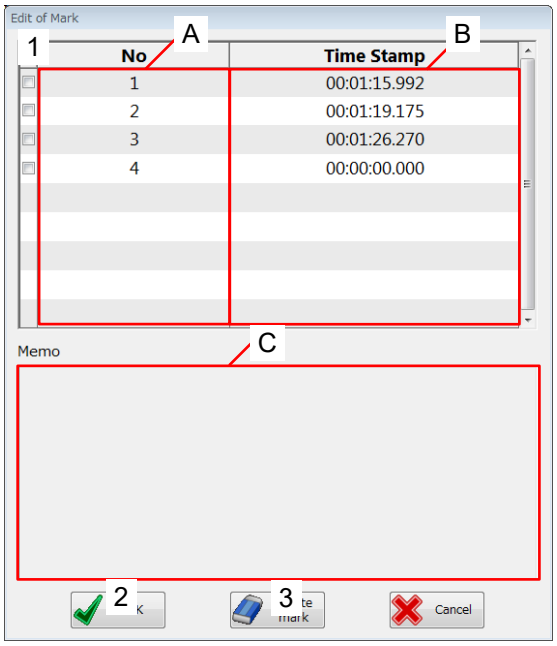
Operating instructions

1	Display range	Displays a display range setup screen.
2	Grid setting	Displays a grid setup screen.
3	2 cursor	Displays a 2-cursor setup screen.
4	Color change	This changes the color of lines. Select the color from the color palette. If the <A> “Apply to all items” check box is selected, the selected line color applies to all signals.
5	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
6	Application	This confirms the changed settings.

16-8. Edit of Mark

- Click "Edit of Mark" under on the Split graph display screen or Combo graph display screen to display the mark editing screen. Or, the mark editing screen is displayed by double-clicking the marked parts.

Mark editing screen

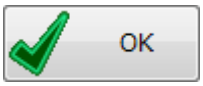


SMU-10034

Screen layout

A	No	This displays the mark number. The mark number is numbered in order of time when the mark is added.
B	Time Stamp	This displays the elapsed time from the start of measuring in the position where the mark is added.
C	Memo	This displays the memo input in the mark settings screen.

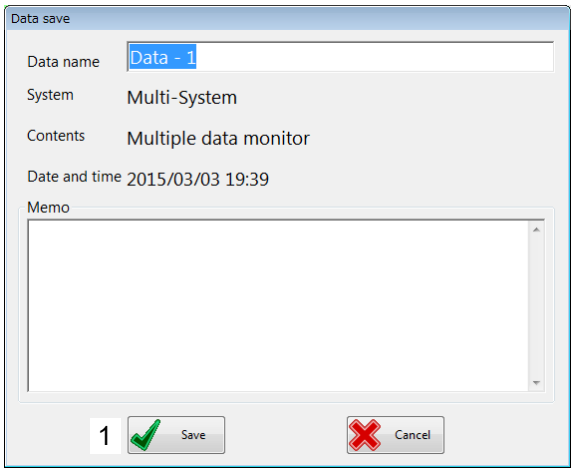
Operating instructions

1		Click to display the check box to select. Click again to deselect.
2		This returns the display to the split graph display screen or the combo graph displayscreen. In this case, this confirms the changed settings.
3		This removes marks with selected check boxes.

16-9. Saving data

- Click the in the menu display area to display the data save screen.

Data save screen



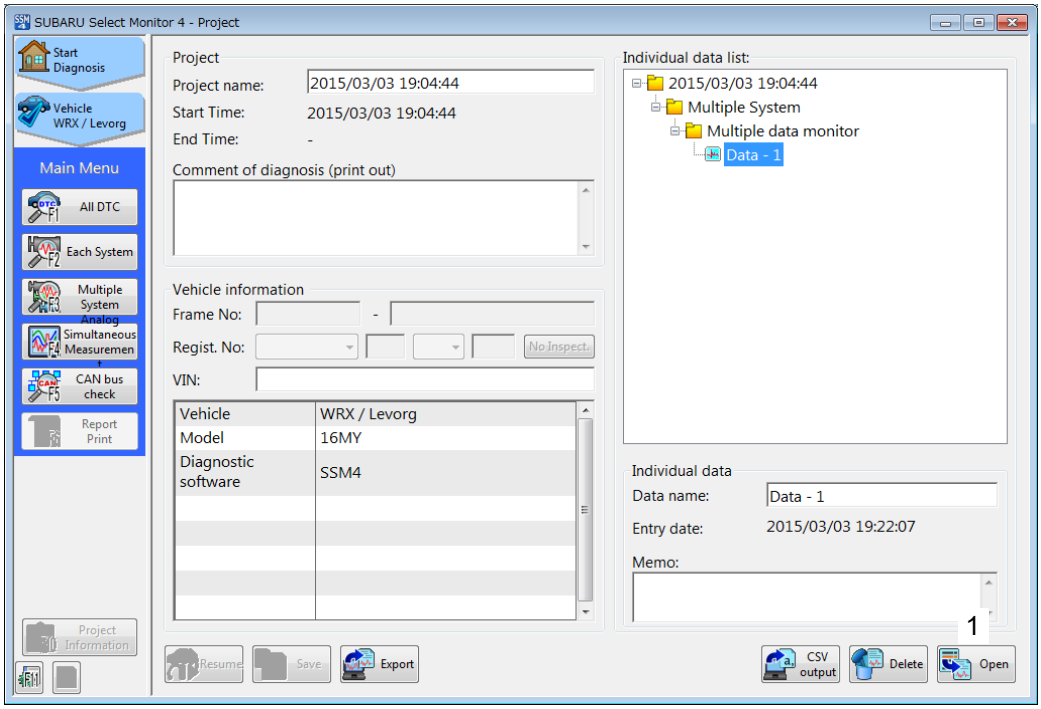
SMU-00153

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

16-10. Loading data

- Click “Project Information” in the menu display area to display the project screen during the diagnosis.

Project screen



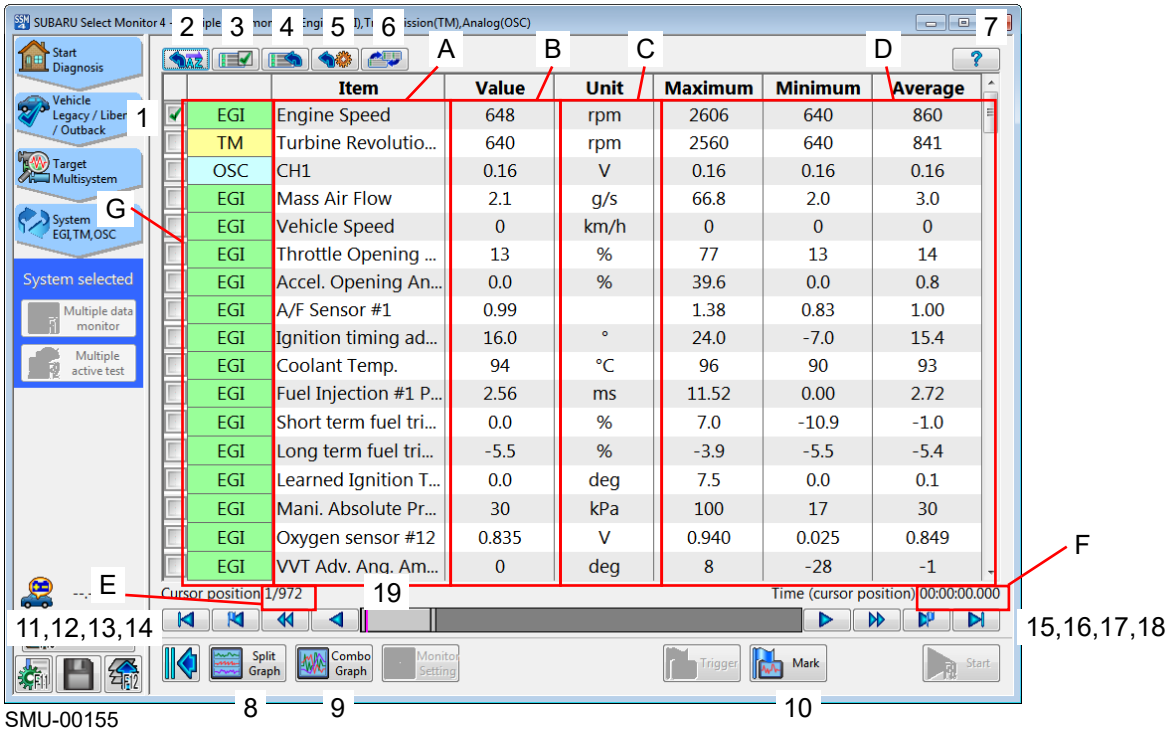
SMU-00154

- Double-click on the desired individual multiple data monitor file from the individual data file list on the project screen or select the desired data and click <1> “Open” to display the load data screen.

Notes

- For the automatic saving data, “Auto save” is written in the memo field.
- The saved multiple data monitor data is under the “Multiple data monitor” in the individual data list.

Load data screen (List display screen)

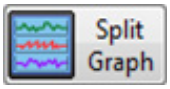
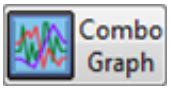


SMU-00155

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Maximum, minimum, average	This displays the maximum, minimum, and average values for all data.
E	Cursor position	This displays the current cursor position and total number of samples.
F	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

Operating instructions

1		Click to display the check box to select. Click again to deselect.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Hides all items without a checkmark in the checkbox or trigger icon. Parameters not displayed are not removed from signal groups.
4		This displays all undisplayed items.
5		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
6		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
7		This displays usable keyboard operations for the displayed screen.
8		This displays the load data screen (Split graph display).
9		This displays the load data screen (Combo graph display).
10		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark.
11		This moves to the beginning of the scroll bar.
12		This moves to the next marked position on the left.
13		This moves the data position (sampling unit) one graduation to the right.

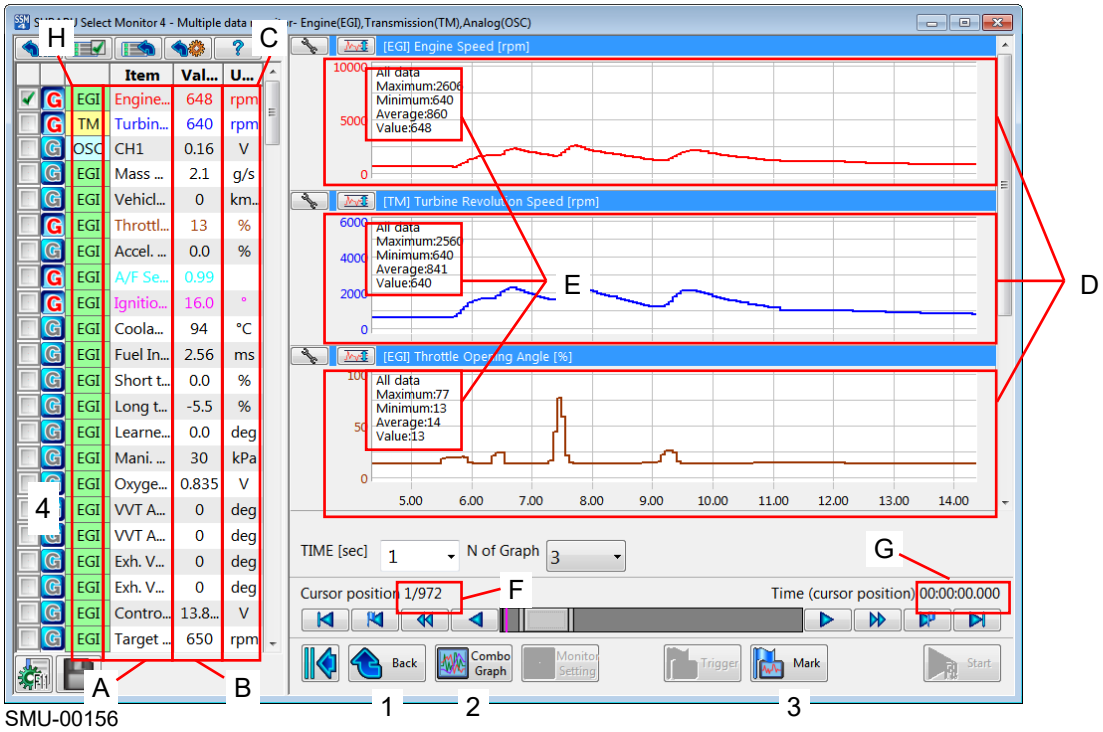
14		This moves data position (sampling unit) one data point to the left.
15		This moves data position (sampling unit) one data point to the right.
16		This moves the data position (sampling unit) one graduation to the right.
17		This moves to the next marked position on the right.
18		This moves to the end of the scroll bar.
19		This enables you to adjust the amount of time (width) displayed on one graph display screen by stretching the end of the scroll bar as desired. The display does not change when stretching the scroll bar on the list display screen.

Notes

- Starting and stopping measuring as well as starting triggering cannot be performed on the load data screen.

- Click either <8> “Split Graph” on the load data screen (List display) or <2> “Split Graph” on the load data screen (Combo graph display) to display the load data screen (Split graph display).

Load data screen (Split graph display)



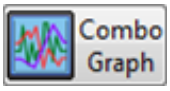
SMU-00156

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays all signal graphs for displayed items. This enables you to change the display order by dragging and dropping the graph windows.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.

F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.
H	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

Operating instructions

1		This returns the display to the load data screen (List display).
2		This displays the combo graph display screen. Refer to “11-6. Combo graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark. Marks can be edited by double-clicking the parts where the mark is located. For a detailed explanation, see “16-8. Edit of Mark”.
4		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

- Click either <9> “Combo Graph” on the load data screen (List display) or <2> “Combo Graph” on the load data screen (Split graph display) to display the load data screen (Combo graph display).

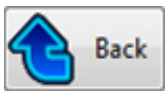
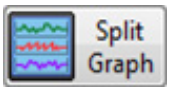
Load data screen (Combo graph display)

SMU-00157

Screen layout

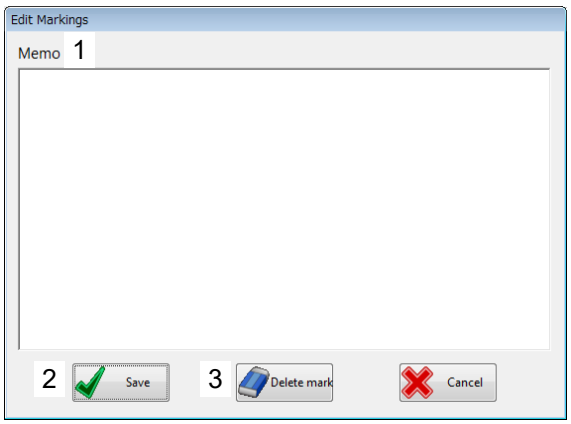
A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.
H	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

Operating instructions

1		This returns the display to the load data screen (List display).
2		This displays the load data screen (Split graph display). Refer to “11-5. Split graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark. Marks can be edited by double-clicking the parts where the mark is located. For a detailed explanation, see “16-8. Edit of Mark”.
4		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

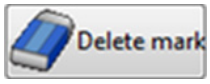
- Click “Mark” on the load data screen to display the mark settings screen.

Mark settings screen



SMU-00158

Operating instructions

1		This enables you to enter notes to marked positions.
2		This saves mark information. This creates a new mark if the position is not currently marked. If the position is currently marked, the note information is overwritten.
3		This deletes the mark. The operation of this button is only effective when “Mark” is clicked at a marked position.

Notes

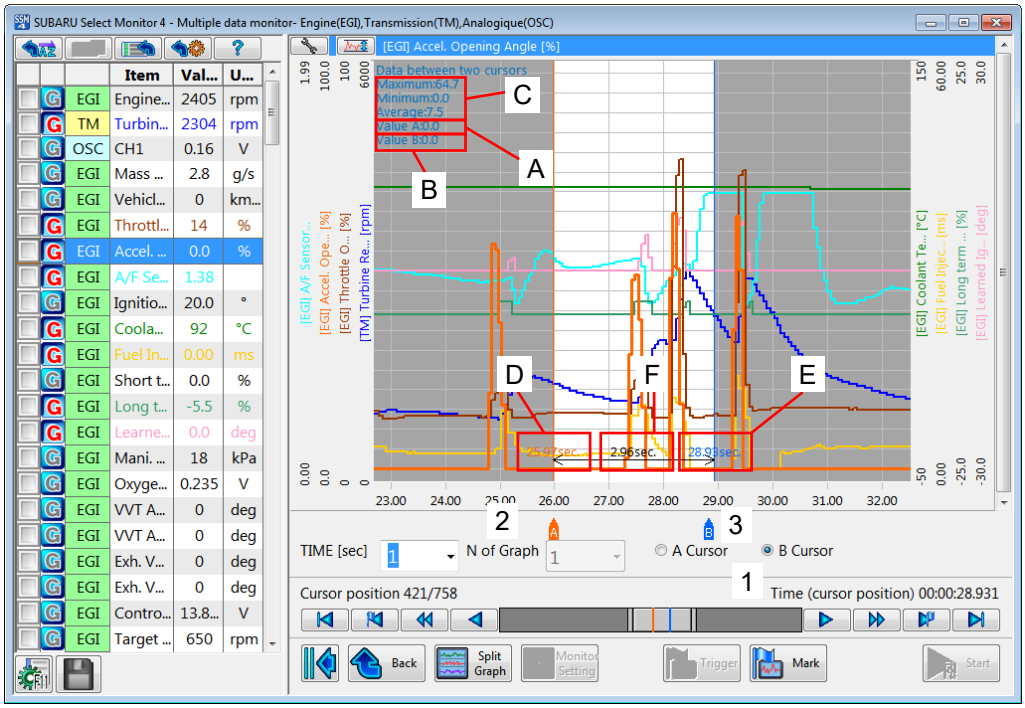
- The confirm data overwrite screen displays if you try to close the data monitor without saving after changes were made to the display state.

16-11. 2-cursor analysis

2-cursor analysis enables you to add the values of any two points of measured data and the maximum, minimum, and average values between these two points.

- Click the - “2-cursor analysis” on the split graph display screen or combo graph display screen to display the 2-cursor analysis screen.

2-cursor analysis screen

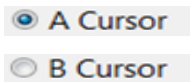


SMU-00159

Screen layout

A	Value A: *	This displays the signal value at the A cursor position.
B	Value B: *	This displays the signal value at the B cursor position.
C	Maximum:* Minimum:* Average:*	This displays the maximum, minimum, and average values between the two cursor positions.
D	*.** sec. (red characters)	This displays the time for the A cursor position.
E	*.** sec. (blue characters)	This displays the time for the B cursor position.
F	*.** sec. (black characters)	This displays the difference in time between the two cursor positions.

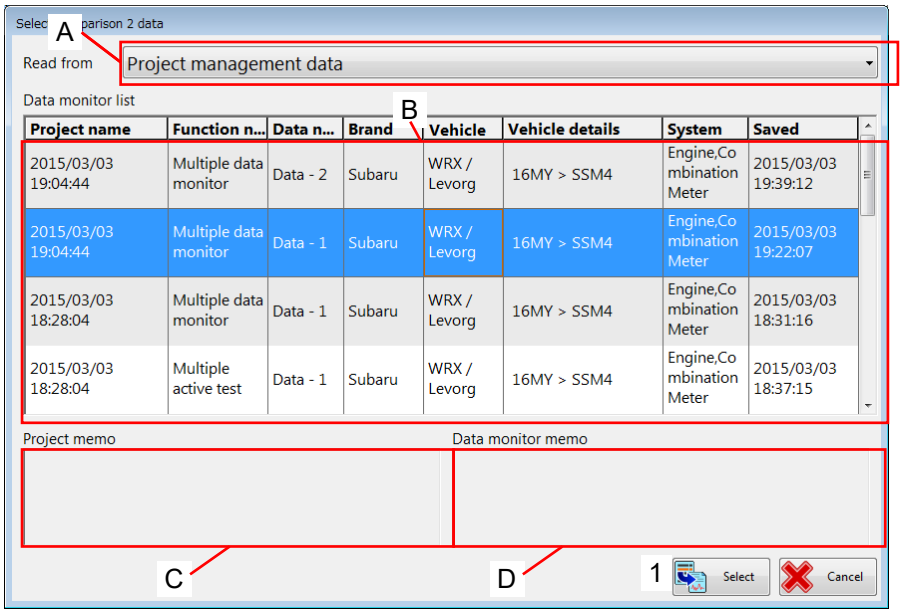
Operating instructions

1		This switches over the selection of the main cursor. This displays the signal value or information on cursor positions according to the position of the selected main cursor.
2		Drag the icon to move the position of cursor A.
3		Drag the icon to move the position of cursor B.

16-12. Data comparison

- From the button, click “Function” and then “Data comparison” to display the select second type of data for comparison screen.

Select second type of data for comparison screen



SMU-00160

Screen layout

A	Read from	This is a pull-down menu for selecting the project to load.
B	Data monitor list	This displays a list of projects stored in the particular folder and that contain comparable individual data (measured data from the data monitor). All individual data in the project are displayed when there are multiple individual data files that can be compared in the same project name.
C	Project memo	This field displays entered notes such as supplementary information on projects. Nothing is displayed if no memo have been entered.
D	Data monitor memo	This field displays entered notes such as supplementary information on individual data. Nothing is displayed if no memo have been entered.

- After selecting individual data from the <B> data monitor list, click <1> “Select” to display the data comparison screen.

Data comparison screen

SMU-00161

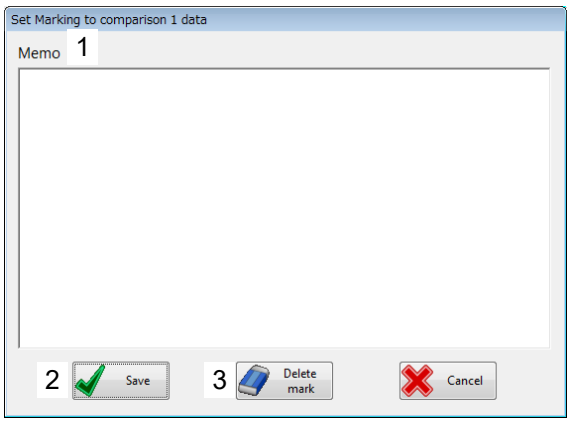
Screen layout

A	List display	This displays the items of which the data monitor item names match between the playback data and comparison data. “-” is displayed when the parameter is not present in either set of data.
B	Playback data	This displays a graph of the playback data.
C	Comparison data	This displays a graph of the comparison data.
D	Cursor position	This displays the current cursor position and total number of samples.
E	Elapsed time	This displays the elapsed time from the start of measuring to the current cursor position.

1		The graph range of items selected on the list display is automatically configured.
2		This returns to the screen before executing “Data comparison”.
3		This adds a mark to the playback data graph. Click this at the marked position to add or change notes for the mark or delete the mark. The mark and line is displayed in blue. A mark setup screen for the comparative data graph appears after setting the mark, when a checkmark is placed in the "Synchronism" checkbox.
4		This adds a mark to the comparison data graph. Click this at the marked position to add or change notes for the mark or delete the mark. The mark and line is displayed in green. A mark setup screen for the recreated data graph appears after setting the mark, when a checkmark is placed in the "Synchronism" checkbox.
5		When this check box is selected, the cursor positions, scroll bar width, and scroll bar positions of playback data and comparison data are synchronized.
6		This moves to the beginning of the scroll bar. (playback data)
7		This moves to the next marked position on the left. (playback data)
8		This moves the data position (sampling unit) one graduation to the left. (playback data)
9		This moves data position (sampling unit) one data point to the left. (playback data)
10		This moves data position (sampling unit) one data point to the right. (playback data)
11		This moves the data position (sampling unit) one graduation to the right. (playback data)
12		This moves to the next marked position on the right. (playback data)
13		This moves to the end of the scroll bar. (playback data)
14		This moves to the beginning of the scroll bar. (comparison data)
15		This moves to the next marked position on the left. (comparison data)
16		This moves the data position (sampling unit) one graduation to the left. (comparison data)
17		This moves data position (sampling unit) one data point to the left. (comparison data)
18		This moves data position (sampling unit) one data point to the right. (comparison data)
19		This moves the data position (sampling unit) one graduation to the right. (comparison data)
20		This moves to the next marked position on the right. (comparison data)
21		This moves to the end of the scroll bar. (comparison data)
22		This enables you to adjust the amount of time (width) displayed on one graph display screen by stretching the end of the scroll bar as desired.

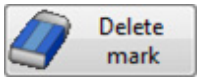
- Click "Mark (Comp1)" or "Mark (Comp2)" on the comparison data screen to display the mark settings screen.

Mark settings screen



SMU-00162

Operating instructions

1		This enables you to enter notes to marked positions.
2		This saves mark information. This creates a new mark if the position is not currently marked. If the position is currently marked, the note information is overwritten.
3		This deletes the mark. The operation of this button is only effective when “Mark” is clicked at a marked position.

Notes

- The confirm data overwrite screen displays if you try to close the data monitor without saving after changes were made to the display state.

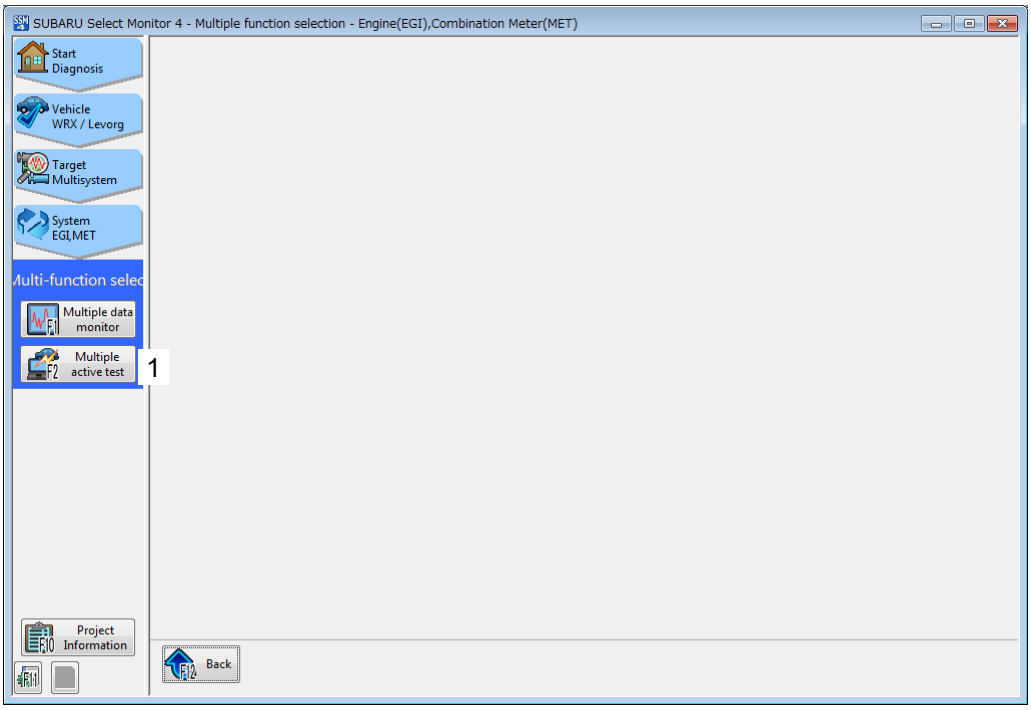
17. Multiple active test

This enables you to manually drive the actuator to check operation in control systems that are compatible with SSM4 and support the active test function.
This enables you to monitor data from multiple systems while also running the active test.

Notes

- The screen displays and operation are mostly the same as that for the “Active test”.
  The difference here is that system names (abbreviated symbols) are displayed together with signal names.

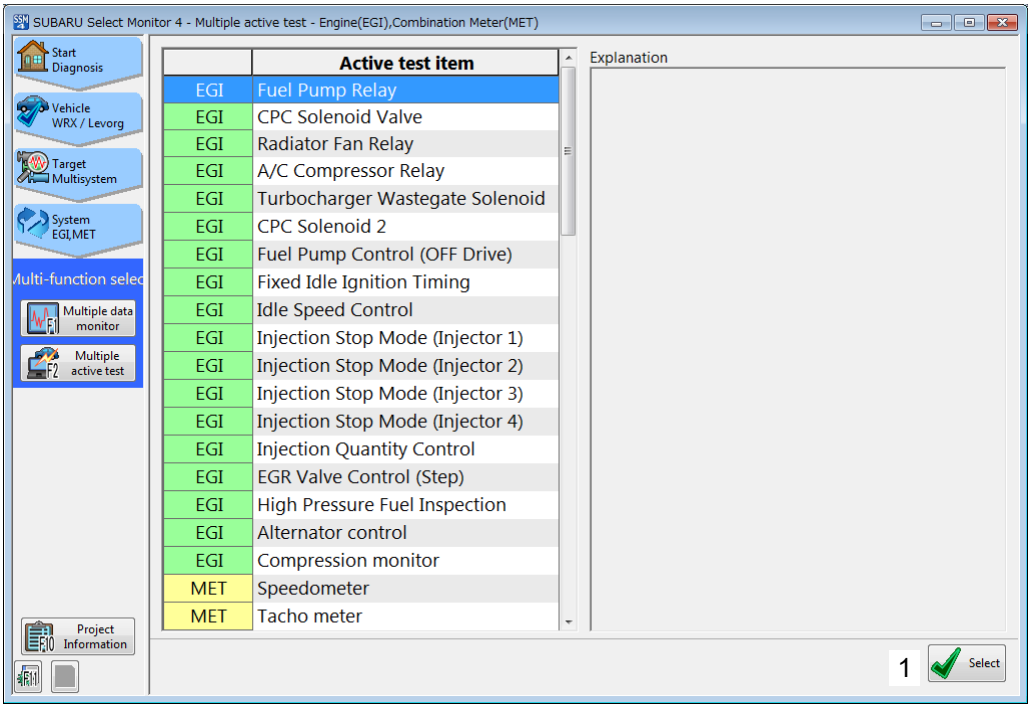
Select function screen



SMU-00163

- Click <1> “Multiple active test” on the select function screen to display the item selection screen.

Item selection screen



SMU-00164

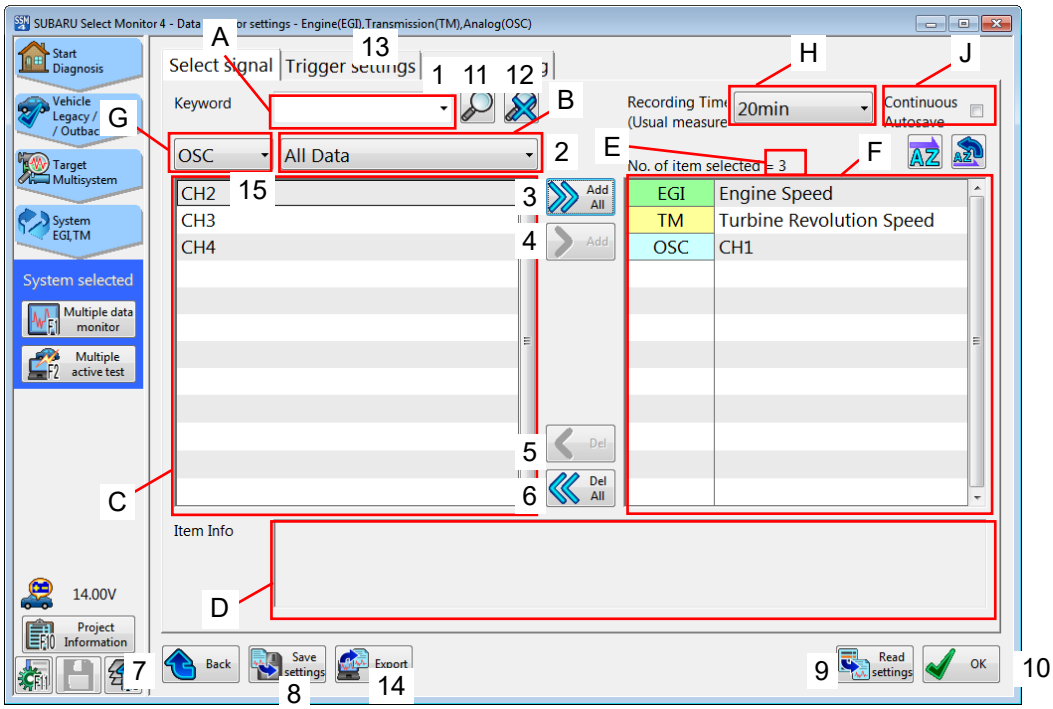
Notes

- “Active test item” differ depending on the system and selected vehicle.
- Detailed information on the selected report is displayed in the description. Detailed information may not be displayed depending on the selected item.

17-1. Select signals

After selecting an item from the item selection screen, click <1> "Select" to display the select signal screen.

Select signal screen



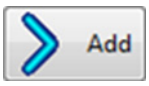
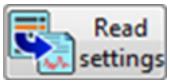
SMU-00165

Screen layout

A	Keyword	This field is where keywords used to filter signals are entered. This enables you to select previously entered keywords from the pull-down menu.
B	Signal group	This is a pull-down menu used to select signal groups.
C	List of selectable signals	This displays measurable signals by the system during diagnostics. The signals displayed differ depending on the selected signal group.
D	Item Info	This displays information on signals selected from the list of selectable signals. Item information may not be displayed depending on the selected signal.
E	No. of item selected	This displays the number of signal items displayed in the list of selected signals.
F	List of selected signals	This displays the signals selected from the list of selectable signals.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.
H	REC Time (Normal)	This pull-down menu is for setting the maximum logging time allowed per data monitoring measurement.
J	Continuous Autosave	By placing a checkmark in the checkbox, data is repeatedly and automatically saved and remeasured during the set maximum logging time. Enable this option to log monitored data beyond the maximum logging time.

Operating instructions

1		This is used to filter the display of signals containing keywords. Enter a keyword or select one from the pull-down menu and then click <11> to filter signals. Click <12> to remove the filter.

2		Signals registered in signal groups selected from the pull-down menu are displayed in the list of selectable signals. Selecting “All Data” displays all signals.
3		This adds measurable signals to the list of selected signals. The insufficient signal against the upper limit 150 of the number of signals should be added.
4		This adds selected signals to the list of selected signals. Multiple signals can be selected at the same time. The upper limit of the number of signals which can be added is 150.
5		This deletes selected signals to the list of selected signals. Multiple signals can be selected at the same time.
6		This removes signals from the list of selected signals.
7		This returns to the item selection screen.
8		This saves the data monitor settings. This saves signal selections and trigger settings.
9		This loads saved data monitor settings.
10		This displays the data monitor screen.
14		Exports data monitoring settings as a file.
15		Signals registered under the system name selected from the pull-down menu are displayed in the “List of selectable signals”. Selecting “OSC” displays the channel for analog measurement.

Notes

- This enables you to run the active test independently without running the data monitor by clicking <10> “Confirmed” without adding signals to the list of selected signals.
- The signals displayed in the list of selectable signals when “All Data” is selected differ depending on the system used and the vehicle for which the data monitor is performed.
- Signal groups first registered for each system differ depending on the system and the vehicle for which the data monitor is performed.
- When “Custom list” displayed in the signal group pull-down menu is selected, the most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the list of selected signals.
- The most recent signals selected for the previous data monitor or active test by the system in diagnostics are displayed in the area displaying the list of selected signals.
- When performing the active test for the first time after installing SSM4, all signal names are displayed in the area that displays the list of selected signals. This cannot be changed.
  Measured signal names can be changed after loading the configuration file. Measured signals can be changed after the second time.

17-2. Trigger settings

This enables you to configure trigger detection conditions to apply triggers to automatically respond to measured signal values.

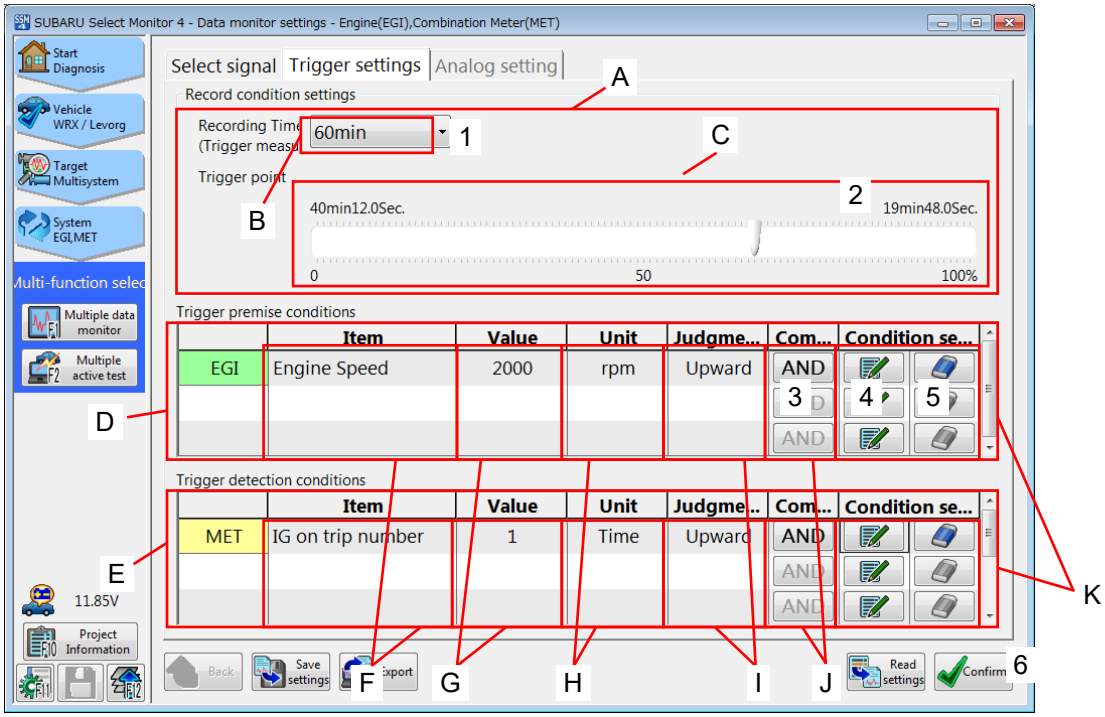
This enables you to configure different conditions for different signals and also configure conditional combinations.

- Click the <13> “Trigger settings” tab on the select signal screen to display the trigger settings screen.

Notes

- Configuring trigger detection conditions is not required to run the active test.
  In this case, click <10> “Confirmed” after selecting a signal on the select signal screen.

Trigger settings screen

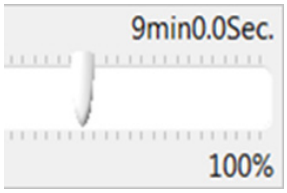


SMU-10030

Screen layout

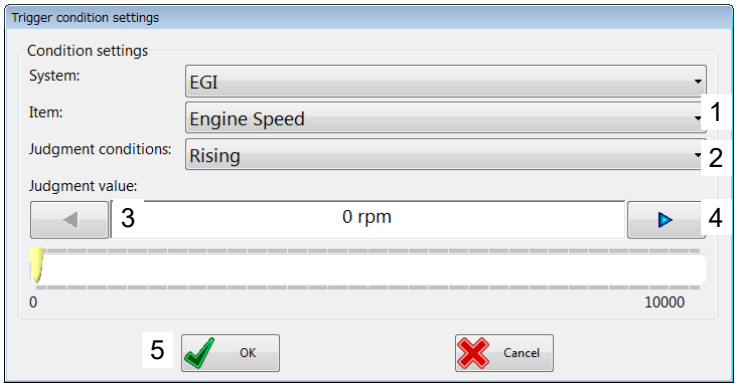
A	Record condition settings	This displays the configured recording conditions.
B	REC Time (Trigger)	This displays the data monitor record time.
C	Trigger point	This displays the trigger point. This displays the amount of record time before and after the timing of triggers. The position of the knob on the slider bar represents the trigger point.
D	Trigger premise conditions	This displays the trigger premise conditions. Triggers do not activate when only the detection conditions are satisfied when preconditions are configured. The preconditions must first be satisfied and then the detection conditions must be satisfied.
E	Trigger detection conditions	This displays the trigger detection conditions.
F	Item	This displays the name of signals for which conditions are configured.
G	Value	This displays the value functioning as the trigger condition.
H	Unit	This displays the unit of measure for each item.
I	Judgment conditions	This displays the judgment conditions for each item.
J	Combination	This displays the button to select the type of conditional combinations.
K	Condition setting	This displays buttons for condition settings.

Operating instructions

1		This changes the record time.
2		Move the slider bar knob to change the trigger point. This enables you to setup an estimated value in percentages displayed under the slider bar.
3		This sets the type of conditional combinations. Click to change between “AND” and “OR”.
4		This displays the configure trigger conditions screen. This enables you to configure trigger conditions for each signal.
5		This deletes trigger conditions for each signal.
6		This displays the data monitor screen.

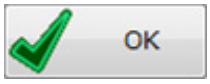
- Click the <4> on the trigger settings screen to display the configure trigger conditions screen.

Configure trigger conditions screen



SMU-00167

Operating instructions

1		This selects the name of signals for which trigger conditions are configured.
2		This changes the judgment conditions.
3		This lowers the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
4		This raises the judgment value. This also enables you to adjust the value with the slider bar. If judgment value is a numerical value, it can be input with a keyboard.
5		This returns the display to the trigger settings screen.

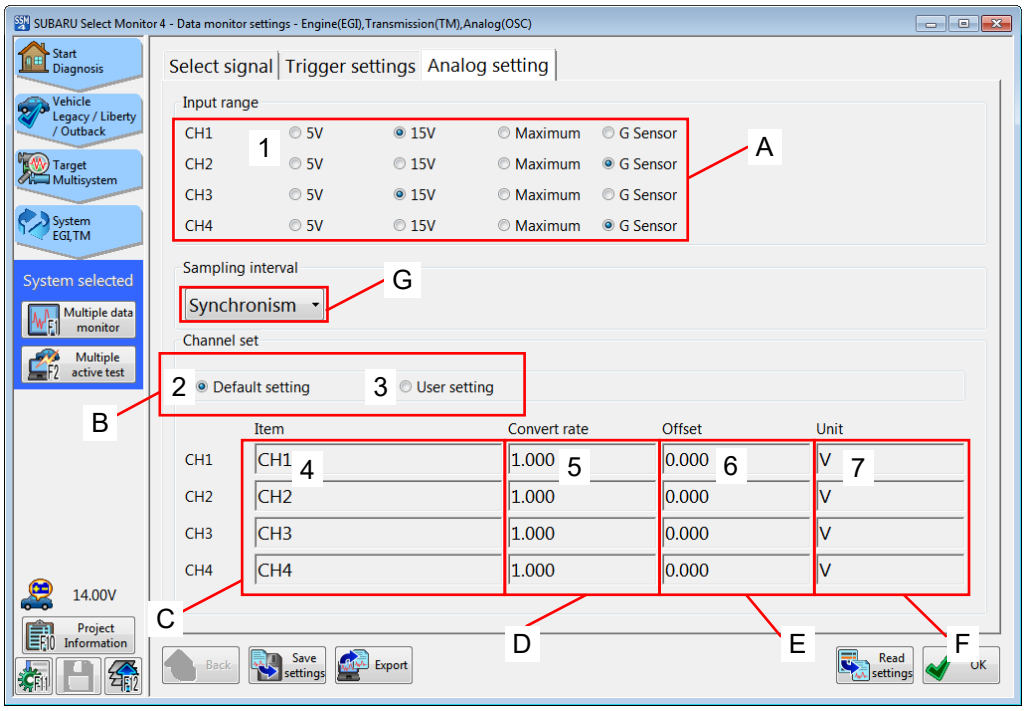
17-3. Analog settings

The analog settings includes input range and channel settings.

This also enables you to save configuration data and load saved configuration files.

- Click the <2> "Analog settings" tab on the select signal screen or the <1> "Analog settings" tab on the trigger settings screen to display the analog settings screen.

Analog settings screen



SMU-10045

Screen layout

A	Input range	This displays the input range for each channel. The input range is selected by clicking the radio button to the left of each item. The following ranges are available for each item. • 5 V: -5 V to +5 V • 15 V: -15 V to +15 V • Maximum: -150 V to +150 V • G sensor: -5V to +5V When measuring the G sensor output with the optional switch box cable, select a “G sensor”. If "G Sensor" is selected, the numeric values for physical quantity (unit: G) conversion are automatically entered in "Convert rate", "Offset" and "Unit ", to indicate the physical quantities (unit: G). The numeric values for physical quantity (unit: G) conversion are as follows. Convert rate : 1.515 Offset : -2.5 Unit : G The output destination channel of each G sensor is as follows. CH2: X-axis output CH3: Y-axis output CH4: Z-axis output Do not select the G sensor for CH1 because the switch box cable cannot physically connect to it.
B	Channel set	This displays the status of channel settings. The channel setting method is selected by clicking the radio button to the left of each item.
C	Item	This displays the channel name of each channel. This enables you to change this as desired.
D	Conversion rate	This displays the conversion rate for each channel. This displays values as they are measured in accordance with the multiplier configured for analog measured signal values.

E	Offset	This displays the offset value for each channel. This displays sum values as they are measured in accordance with the additional value configured for analog measured signals.
F	Unit	This displays the unit of measurement for each channel. The configured units are displayed on screen during measuring.
G	Sampling interval	Displays the signal sampling interval for analog measurements. Signals during analog measurements are sampled at the same interval as control module measurements, when "Synchronism" is selected.

Operating instructions

1		This enables you to select the input range for each channel.
2		Selecting this will return the “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel to their default settings. Item settings cannot be changed when the default settings are selected.
3		Selecting this enables you to change the settings of “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel.
4		Channel names can be entered as desired when “User settings” is selected.
5		The conversion rate value can be entered as desired when “User settings” is selected.
6		The offset value can be entered as desired when “User settings” is selected.
7		Units of measure can be entered as desired when “User settings” is selected.

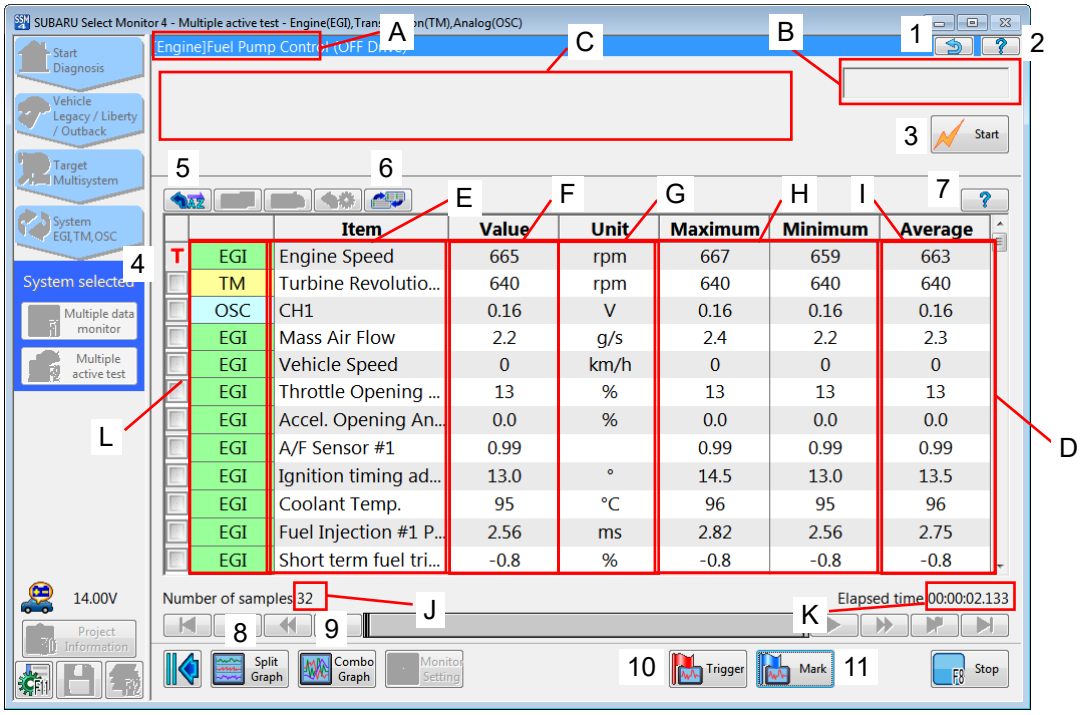
Notes

- If “analog setting” is grayed out and cannot be clicked, select “OSC” from “System name display area” on the signal selection screen, and add the analog measurement signal to the list of selected signals.
- All settings for analog measured signals (ch. 1-4) can be changed.
  Settings can be changed even when not selected on the select signal screen.

17-4. List display

After adding data monitor signals to the list of selected signals via the select signal screen or the trigger settings screen, click “Confirmed” to display the run active test screen and start measuring.

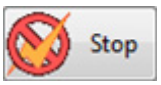
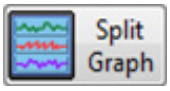
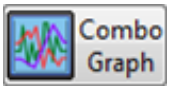
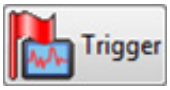
Run active test screen (List display screen)



SMU-00168

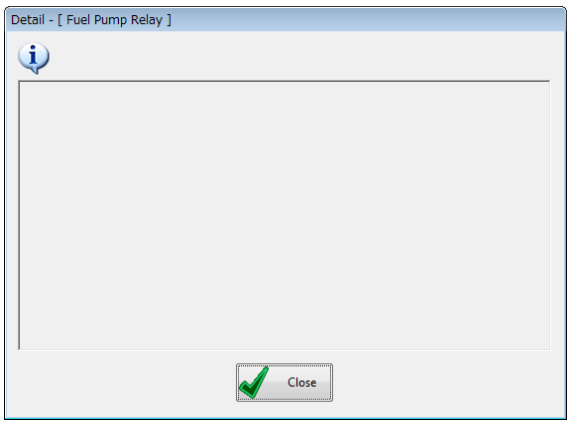
Screen layout

A	Active test item	This displays the names of active test items.
B	Start status	This displays the drive state (“Start” or “Stop”) of the actuator.
C	Operation panel	This displays the active test operation panel. The operation panel displayed differs depending on the selected item.
D	List display	This displays the data monitor details. The display details are the same as the display for the data monitor function.
E	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
F	Value	This displays the signal value.
G	Unit	This displays the unit of measure for each item.
H	Maximum/Minimum	This displays the maximum/minimum values. The display updates when the maximum and minimum values change.
I	Average	This displays the average value over the time from the start of measuring to the current data point. The display updates when measured data is acquired.
J	Number of samples	This displays the number of samples currently acquired.
K	Elapsed time	This displays the elapsed time from the start of measuring.
L	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

1		This resets the operation panel settings.
2		This displays detailed information for the selected active test items.
3	 	This starts and stops the active test. “Start” is displayed when the active test is not running. “Stop” is displayed when the active test is running. This icon may be inoperable or may not display depending on the selected active test items.
4		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
5		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
6		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
7		This displays usable keyboard operations for the displayed screen.
8		This displays the split graph display screen. Refer to “12-5. Split graph display” for more information.
9		This displays the combo graph display screen. Refer to “12-6. Combo graph display” for more information.
10		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
11		This adds a mark. You can also add the marking by pressing the numeric key or alphabetical key.

- Click <2> on the run active test screen to display the detailed information screen.

Detailed information screen



SMU-00169

Notes

- Detailed information may not display on the detailed information screen depending on the active test items.

Caution

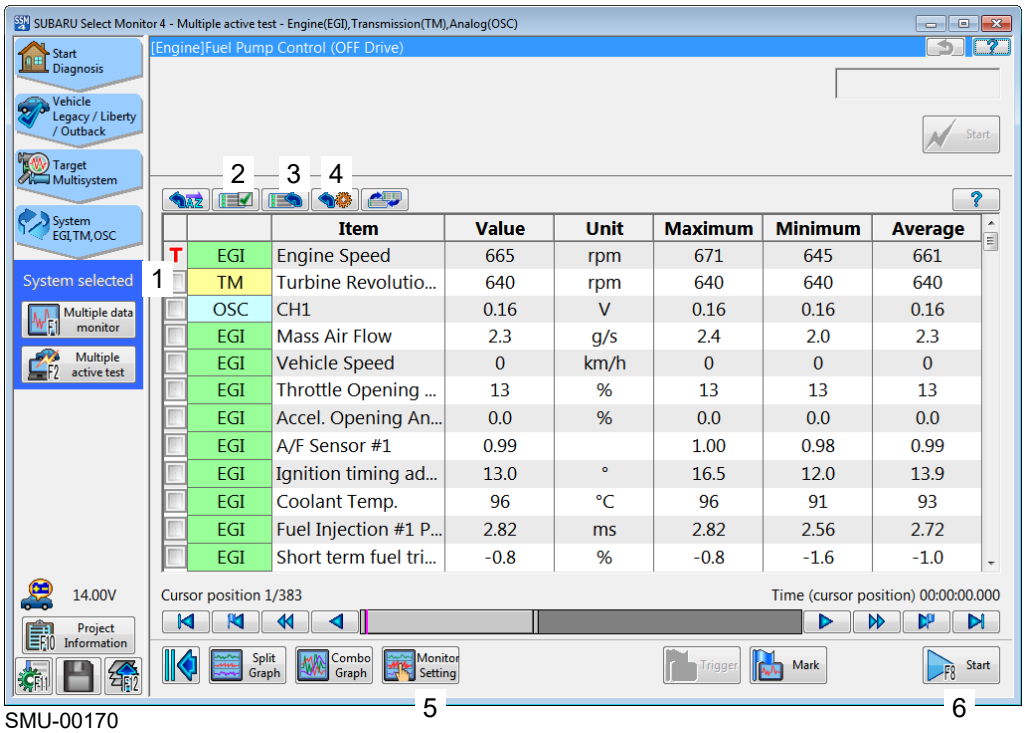
- Make sure to perform your work in accordance with the precautions while referencing the detailed information when detailed information is displayed on the detailed information screen while running the active test.
- The active test includes potentially dangerous items. Perform your work while referencing the maintenance manuals.
- Use wheel stoppers to prevent the wheels from moving before you begin work.
- Run the active test in safe location.
- Make sure there are no other people in the surrounding area before starting.

Important

- The active test manually drives the actuator in a different way from normal operation. Do not run the active test for extended periods of time or run the test repeatedly.
  This may result in a vehicle accident.

- Click <3> “Start” on the run active test screen to start driving the active test item.
- Use the operation panel to run the active test.

Run active test screen (while not measuring)



SMU-00170

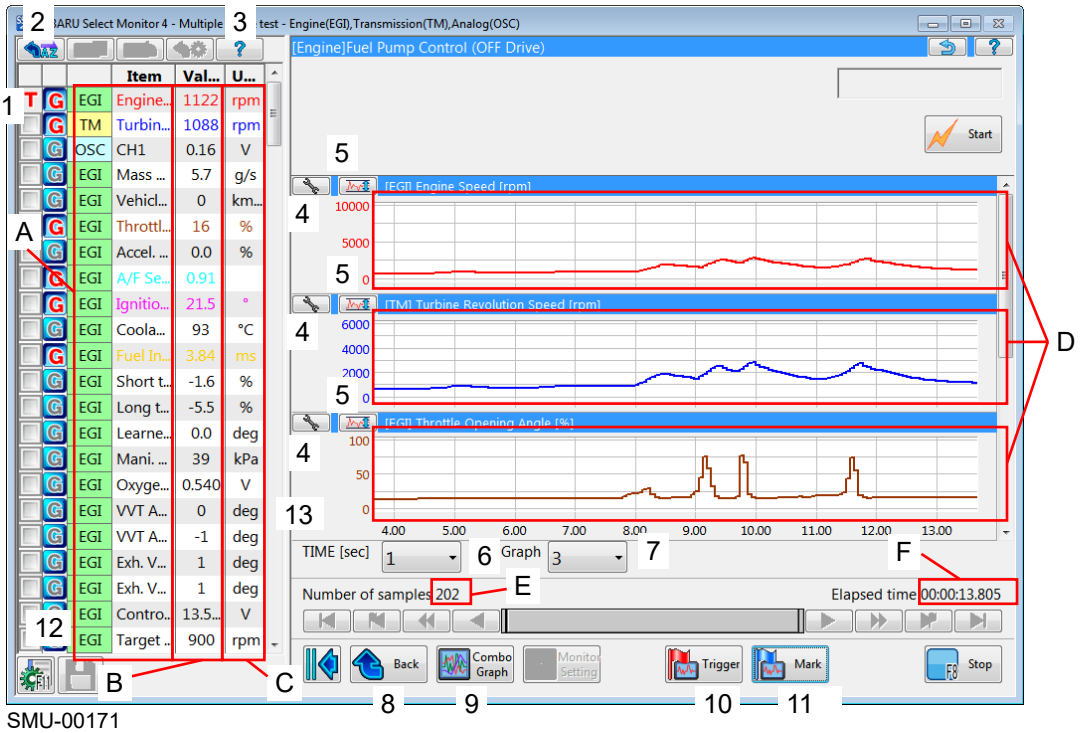
Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.

17-5. Split graph display

- Click either <10> "Split Graph" on the list display screen or <10> "Split Graph" on the combo graph display screen to display the split graph display screen.

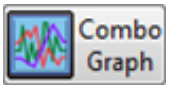
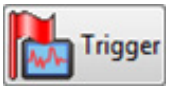
Split graph display screen



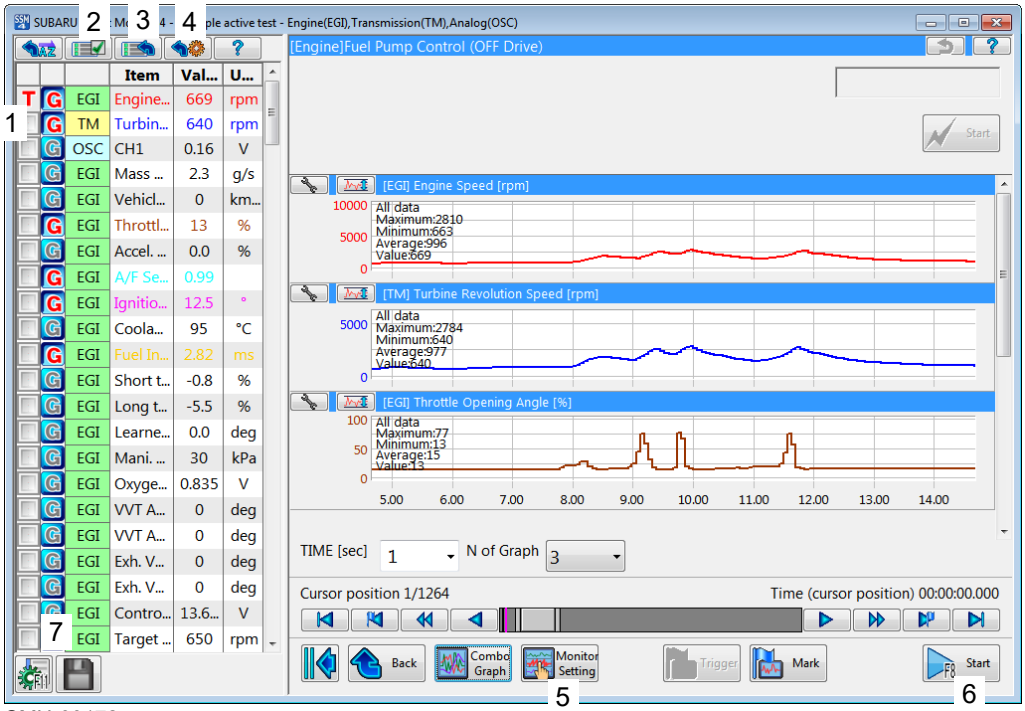
SMU-00171

Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays all signal graphs for displayed items. This enables you to change the display order by dragging and dropping the graph windows. This enables you to add the mark by clicking on the graph windows.
E	Number of samples	This displays the number of samples currently acquired.
F	Elapsed time	This displays the elapsed time from the start of measuring.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		This displays usable keyboard operations for the displayed screen.
4		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “12-7. Line graph settings” and “12-11. 2-cursor analysis” for more information.
5		This automatically configures the graph range. The applicable range can be configured with the “Graph settings”.
6		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
7		This configures the graph qty displayed together on one screen. This can set to a value between “1” and “7”.
8		This returns the display to the list display screen.
9		This displays the combo graph display screen. Refer to “12-6. Combo graph display” for more information.
10		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
11		This adds a mark. This enables you to add the mark by clicking on the graph windows. You can also add the marking by pressing the numeric key or alphabetical key.
12		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.
13		This enables you to change the width of the item display area and graph display area by dragging the cursor to the right and left.

Split graph display screen (while not measuring)



SMU-00172

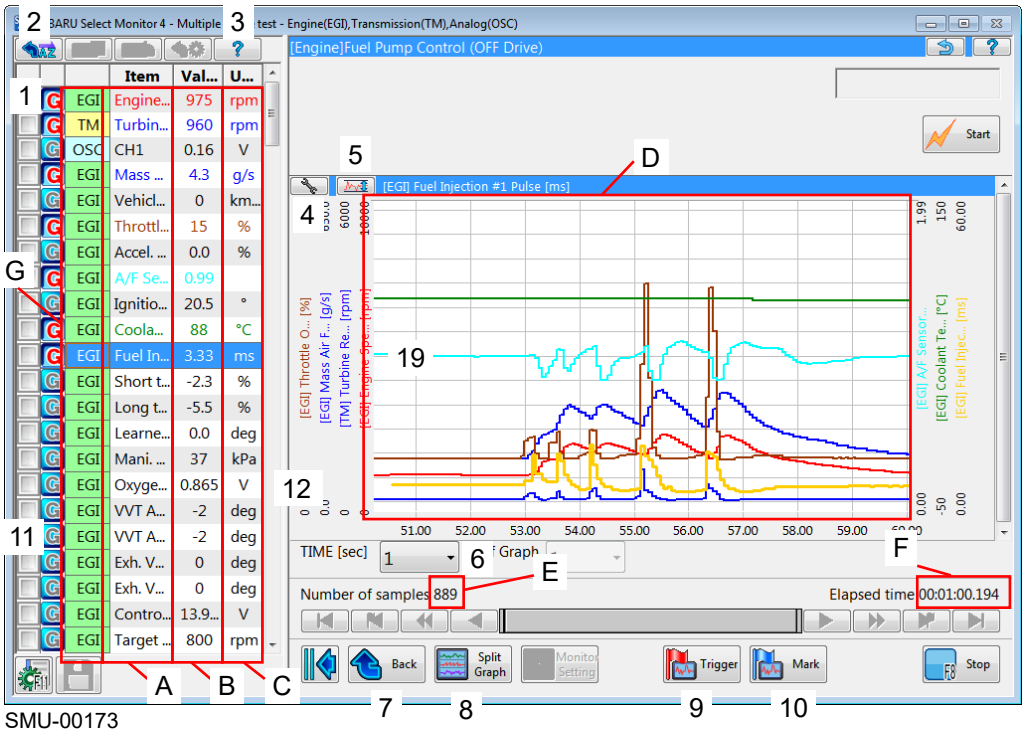
Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.
7		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

17-6. Combo graph display

- Click either <11> "Combo Graph" on the list display screen or <11> "Combo Graph" on the split graph display screen to display the combo graph display screen.

Combo graph display screen



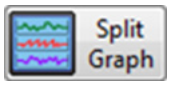
SMU-00173

Screen layout

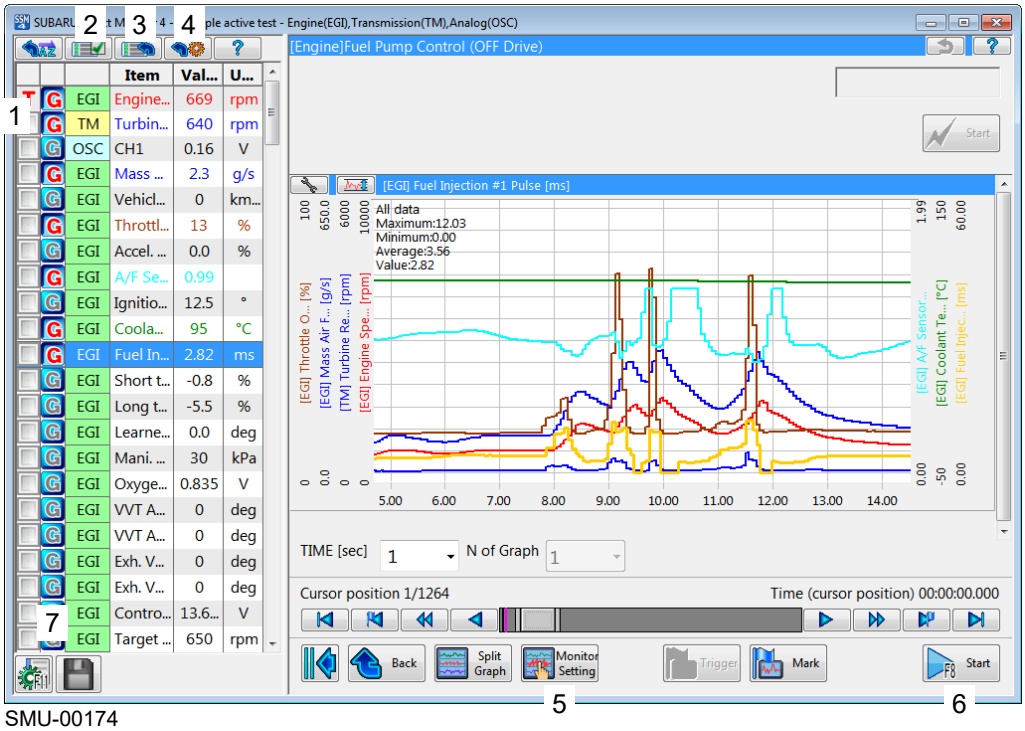
A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items. This enables you to add the mark by clicking on the graph windows.
E	Number of samples	This displays the number of samples currently acquired.
F	Elapsed time	This displays the elapsed time from the start of measuring.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

Notes

- The graph qty cannot be selected.
  The graph qty automatically changes between 1 or 2 depending on the number of items.

1		The trigger icon T is displayed for items configured with triggers. This cannot be operated when measuring is in progress.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		This displays usable keyboard operations for the displayed screen.
4		This configures graph settings, 2-cursor analysis and edit of mark. Refer to “12-7. Line graph settings” and “12-11. 2-cursor analysis” for more information.
5		The graph range of items selected on the list display is automatically configured. The applicable range can be configured with the “Graph settings”.
6		This configures the temporal axis for graph displays. This can also be manually entered (minimum of a 2-digit value to a maximum of 360). This cannot be entered while measuring is in progress.
7		This returns the display to the load data screen (List display).
8		This displays the split graph display screen. Refer to “12-5. Split graph display” for more information.
9		This starts manual triggers while measuring. After triggering starts, measuring stops in accordance with the trigger settings. This cannot be clicked when measuring is not in progress.
10		This adds a mark. This enables you to add the mark by clicking on the graph windows. You can also add the marking by pressing the numeric key or alphabetical key.
11		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.
12		This enables you to change the width of the item display area and graph display area by dragging the cursor to the right and left.

Combo graph Display screen (while the actuator is stopped)



SMU-00174

Operating instructions

1		Click to display the check box to select. The trigger icon T is displayed for items configured with triggers. Click again to deselect. This cannot be operated when measuring is in progress.
2		Hides all items without a checkmark in the checkbox or trigger icon T. Items that are not displayed are not measured. Parameters not displayed are not removed from signal groups. This cannot be operated when measuring is in progress.
3		This displays all undisplayed items. This cannot be operated when measuring is in progress.
4		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
5		This displays the select signal screen. This cannot be clicked when measuring is in progress.
6		This starts measuring. The items that are not displayed by the <2> button are not measured.
7		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

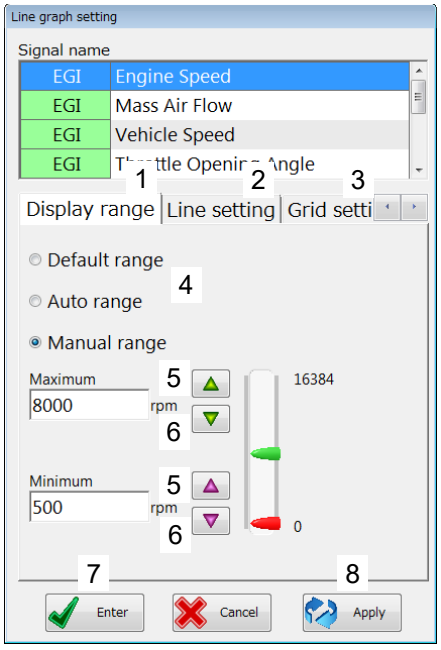
17-7. Line graph settings

- Click the - “Graph settings” on the split graph display screen or combo graph display screen to display the display range settings screen.

Notes

- This enables you to select signal names and configure each signal when changing the display from the combo graph display screen to the display range settings screen.

Display range settings screen



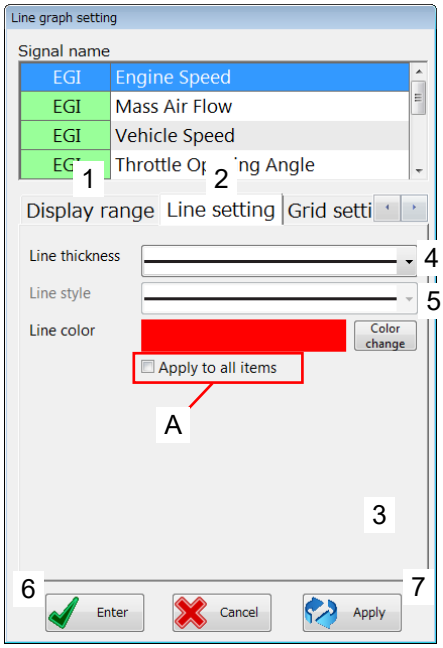
SMU-00095

Operating instructions

1	Line setting	This displays the line settings screen.
2	Grid setting	Displays a grid setup screen.
3	2 cursor	Displays a 2-cursor setup screen.
4	Default range Auto range Manual range	This selects the method to configure the graph range. The default range for value axis (vertical axis) of the graph is configured to the specified value of each signal. Auto range automatically configures the value axis of the graph on the basis of measured signal values. Configure the maximum and minimum values as desired for manual ranges. This cannot be configured for certain signals. Values can also be directly entered into text boxes.
5		Raises the maximum and minimum values. This also enables you to adjust the value with the slider bar.
6		Lowers the maximum and minimum values. This also enables you to adjust the value with the slider bar.
7	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.

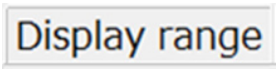
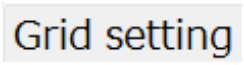
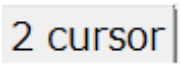
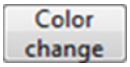
6		This confirms the changed settings.

Line settings screen

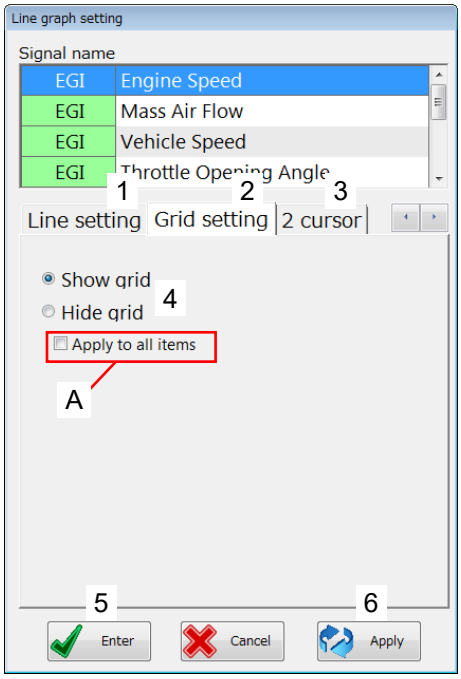


SMU-00096

Operating instructions

1		Displays a display range setup screen.
2		Displays a grid setup screen.
3		Displays a 2-cursor setup screen.
4		This changes the thickness and style of lines. Line styles can be selected only when the line width has been set to the thinnest option.
5		This changes the color of lines. Select the color from the color palette. If the <A> “Apply to all items” check box is selected, the selected line color applies to all signals.
6		This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
7		This confirms the changed settings.

Grid setup screen

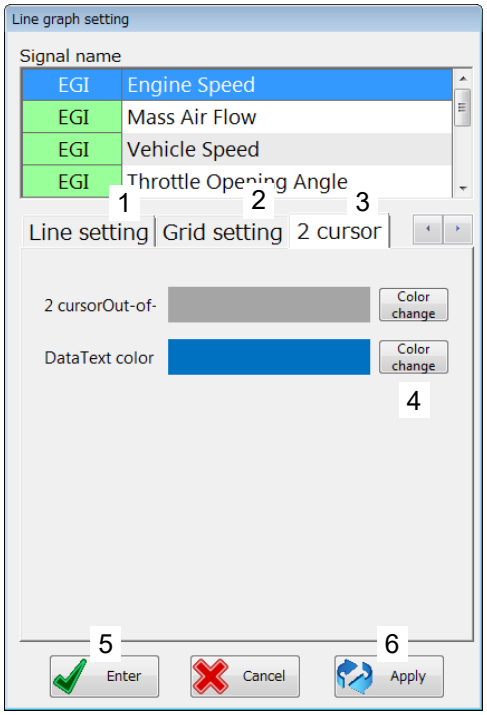


SMU-10042

Operating instructions

1	Display range	Displays a display range setup screen.
2	Line setting	Displays a line setup screen.
3	Grid setting	Displays a grid setup screen.
4	Show grid Hide grid	Sets whether to show or hide the grid on graph screens. Selected options are set for all signals when a checkmark is placed in the <A>"Apply to all signals" checkbox.
5	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
6	Application	This confirms the changed settings.

2-cursor setup screen



SMU-10043

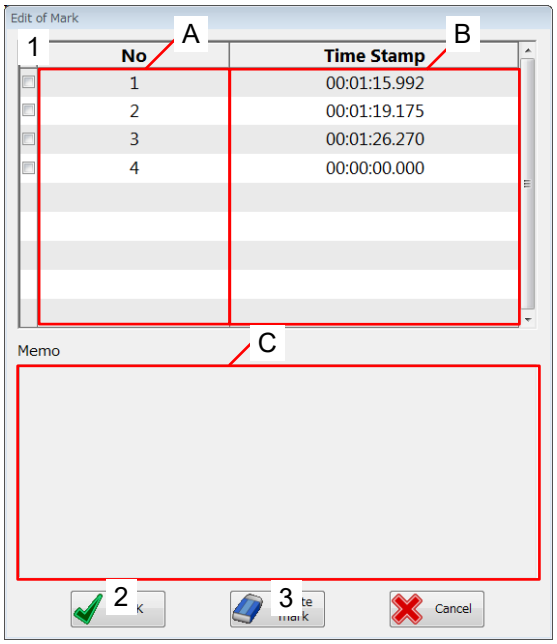
Operating instructions

1	Display range	Displays a display range setup screen.
2	Grid setting	Displays a grid setup screen.
3	2 cursor	Displays a 2-cursor setup screen.
4	Color change	This changes the color of lines. Select the color from the color palette. If the <A> “Apply to all items” check box is selected, the selected line color applies to all signals.
5	Enter	This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
6	Application	This confirms the changed settings.

17-8. Edit of Mark

- Click "Edit of Mark" under on the Split graph display screen or Combo graph display screen to display the mark editing screen. Or, the mark editing screen is displayed by double-clicking the marked parts.

Mark editing screen

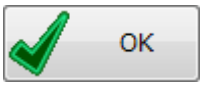


SMU-10034

Screen layout

A	No	This displays the mark number. The mark number is numbered in order of time when the mark is added.
B	Time Stamp	This displays the elapsed time from the start of measuring in the position where the mark is added.
C	Memo	This displays the memo input in the mark settings screen.

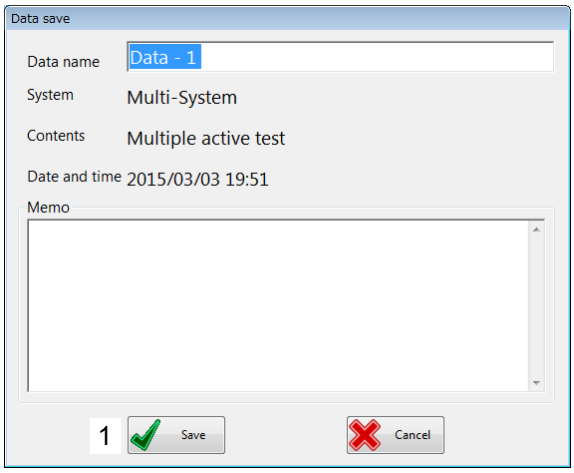
Operating instructions

1		Click to display the check box to select. Click again to deselect.
2		This returns the display to the split graph display screen or the combo graph display screen. In this case, this confirms the changed settings.
3		This removes marks with selected check boxes.

17-9. Saving data

- Click the in the menu display area to display the data save screen.

Data save screen



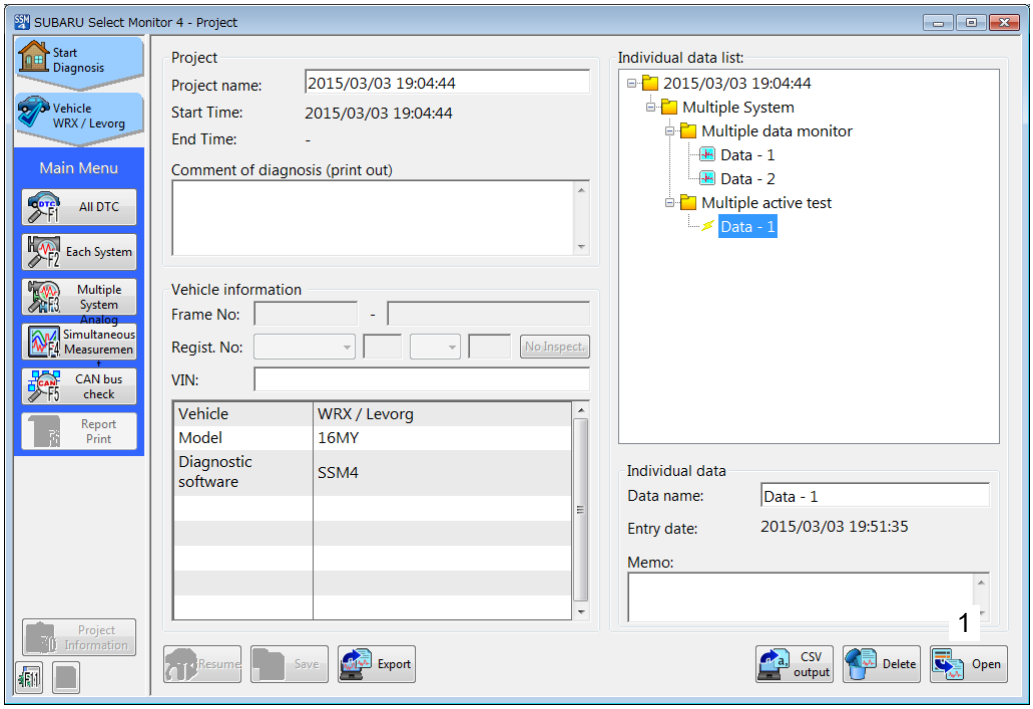
SMU-00177

- Change the data name and enter notes as necessary, and then click <1> “Save” on the data save screen to save the data to a project and close the screen.

17-10. Loading data

- Click “Project Information” in the menu display area to display the project screen during the diagnosis.

Project screen



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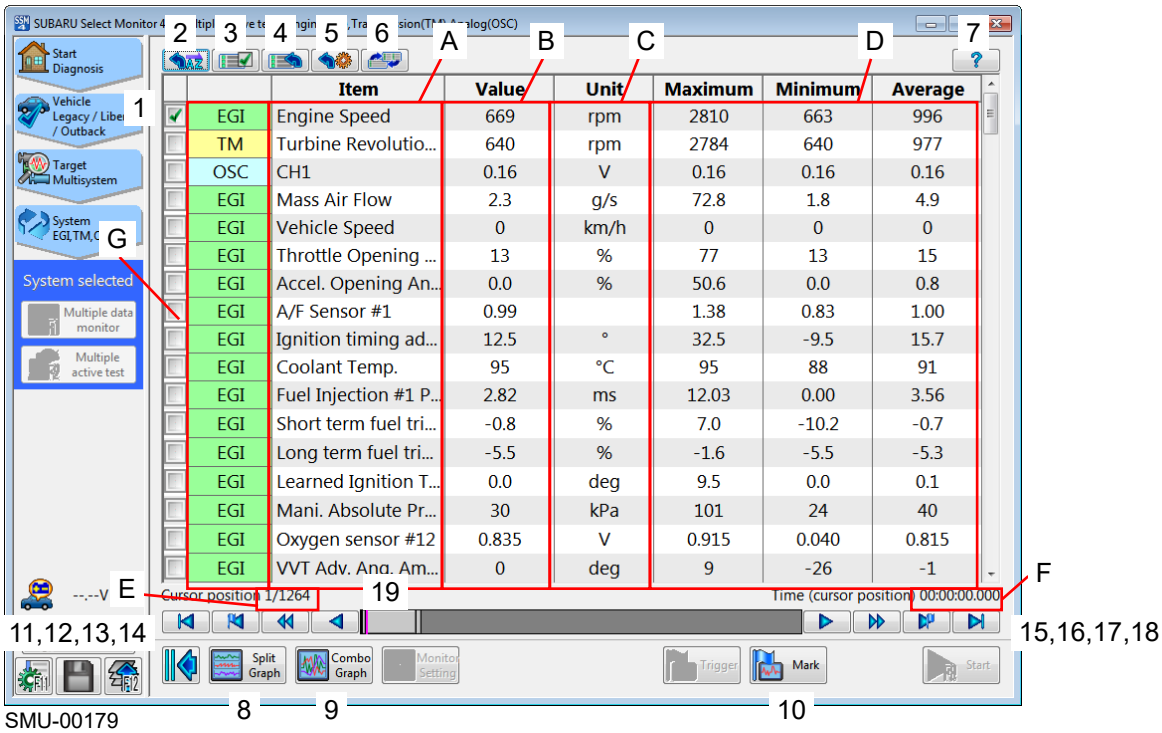
- Double-click on the desired individual multiple active test file from the individual data file list on the project screen or select the desired data and click <1> "Open" to display the load data screen.

Notes

- For the automatic saving data, “Auto save” is written in the memo field.
- The saved multiple active test data is under the “Multiple active test” in the individual data list.

Load data screen (List display screen)



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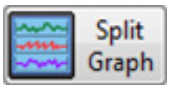
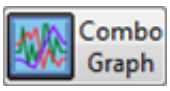
Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Maximum, minimum, average	This displays the maximum, minimum, and average values for all data.
E	Cursor position	This displays the current cursor position and total number of samples.
F	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.
G	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

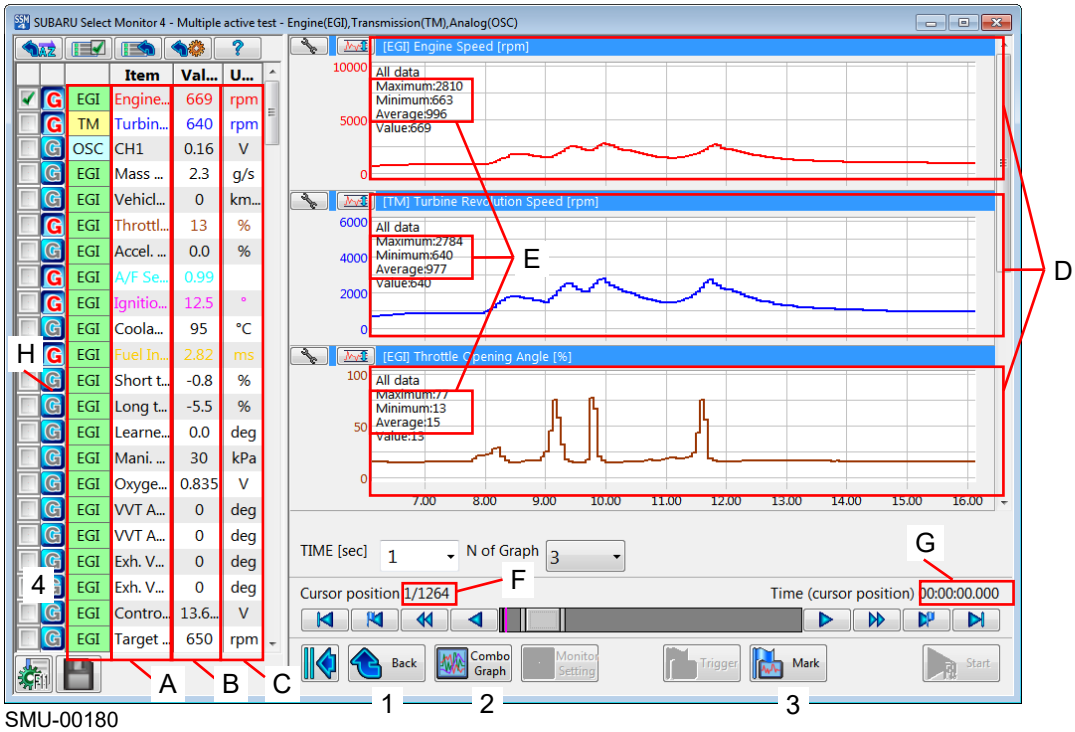
1		Click to display the check box to select. Click again to deselect.
2		This returns the item display order to the default settings or the order immediately after changing the signal groups. Items not displayed remain undisplayed.
3		Hides all items without a checkmark in the checkbox or trigger icon. Parameters not displayed are not removed from signal groups.
4		This displays all undisplayed items.
5		This initializes settings configured via the data monitor. The settings initialized include the measured signal list, check box selection state, graph display state, sort, and trigger settings.
6		Switches the list display between 1-column and 2-column displays. Maximum, minimum, and average values are not displayed on the 2-column display.
7		This displays usable keyboard operations for the displayed screen.
8		This displays the load data screen (Split graph display).
9		This displays the load data screen (Combo graph display).
10		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark.
11		This moves to the beginning of the scroll bar.
12		This moves to the next marked position on the left.
13		This moves the data position (sampling unit) one graduation to the right.
14		This moves data position (sampling unit) one data point to the left.
15		This moves data position (sampling unit) one data point to the right.
16		This moves the data position (sampling unit) one graduation to the right.
17		This moves to the next marked position on the right.
18		This moves to the end of the scroll bar.
19		This enables you to adjust the amount of time (width) displayed on one graph display screen by stretching the end of the scroll bar as desired. The display does not change when stretching the scroll bar on the list display screen.

Notes

- Starting and stopping measuring as well as starting triggering cannot be performed on the load data screen.

- Click either <8> “Split Graph” on the load data screen (List display) or <2> “Split Graph” on the load data screen (Combo graph display) to display the load data screen (Split graph display).

Load data screen (Split graph display)



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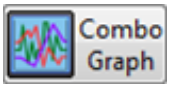
Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays all signal graphs for displayed items. This enables you to change the display order by dragging and dropping the graph windows.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.
H	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

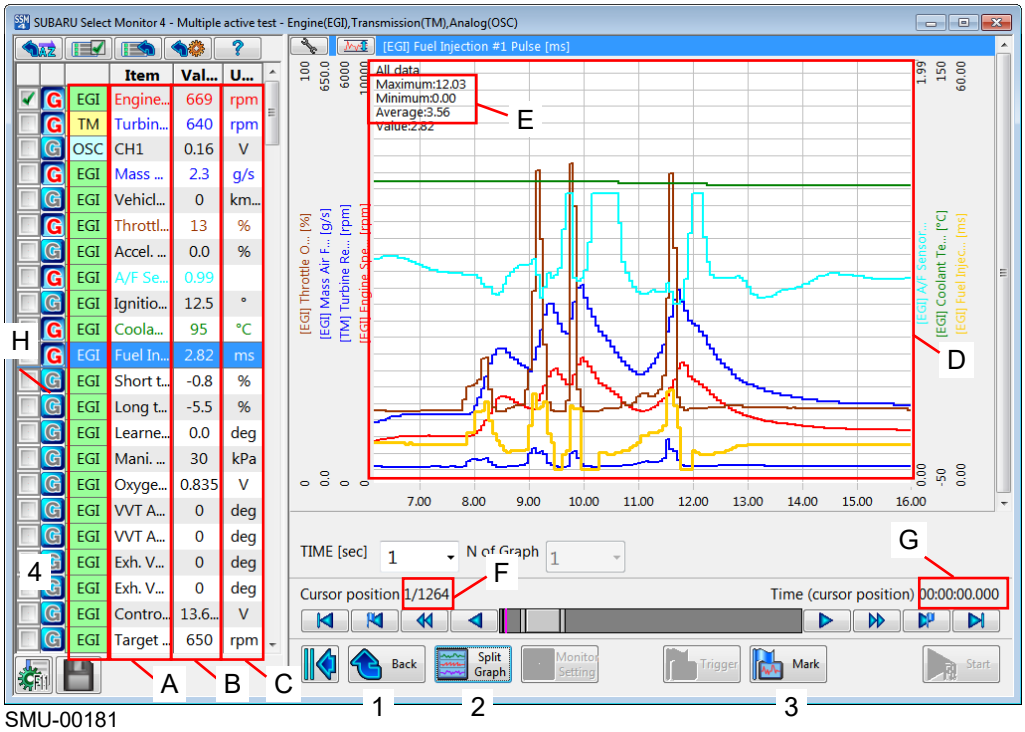
Operating instructions

1		This returns the display to the load data screen (List display).
2		This displays the load data screen (Combo graph display). Refer to “12-6. Combo graph display” for more information.

3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark. Marks can be edited by double-clicking the parts where the mark is located. For a detailed explanation, see “17-8. Edit of Mark”.
4		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

- Click either <9> “Combo Graph” on the load data screen (List display) or <2> “Combo Graph” on the load data screen (Split graph display) to display the load data screen (Combo graph display).

Load data screen (Combo graph display)



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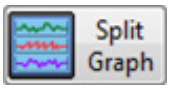
Screen layout

A	Item	This displays the data monitor signal name. This enables you to change the display order by selecting the signal, dragging and dropping the selected signal. You can also change the display order by right-clicking the selected signal and clicking either “Move up one” or “Move down one” from the menu.
B	Value	This displays the signal value.
C	Unit	This displays the unit of measure for each item.
D	Graph display	This displays a graph of the double-clicked signals in the list display area. The items name, unit of measure, maximum and minimum values of all items are displayed on the Y axis in the graph. (Maximum/minimum values are displayed vertically in the graph display.) Up to four Y-axis items are displayed on the left of the graph and Y-axis items 5-8 are displayed on the right side. If there are more than eight items, the graph is automatically split into two graphs to display a maximum of 16 items.
E	Graph cursor	This displays the maximum, minimum, and average values on the graph for the current graph cursor point. This displays the time at the cursor position beneath the graph cursor.
F	Cursor position	This displays the current cursor position and total number of samples.
G	Time (cursor position)	This displays the elapsed time from the start of measuring to the current cursor position.

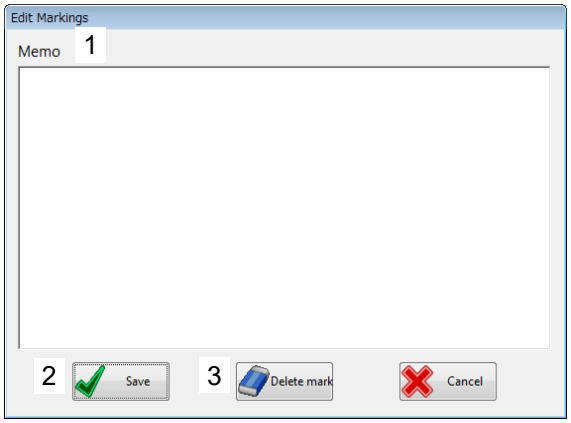
H	System name display area	Abbreviated system names for each signal are displayed. The abbreviation of the system name is used only in SSM4. In the service manual and various service technical documentation, these abbreviations may not used.

Operating instructions

1		This returns the display to the load data screen (List display).
2		This displays the load data screen (Split graph display). Refer to “12-5. Split graph display” for more information.
3		This adds a mark. Click this at the marked position to add or change notes for the mark or delete the mark. Marks can be edited by double-clicking the parts where the mark is located. For a detailed explanation, see “17-8. Edit of Mark”.
4		Shows and hides graphs. When clicked, the button looks pressed and the graph is displayed. Clicking the button again releaeses the button and hides the graph. Graphs can also be shown and hidden by double-clicking the cells in the 'Item' column.

- Click “Mark” on the load data screen to display the mark settings screen.

Mark settings screen



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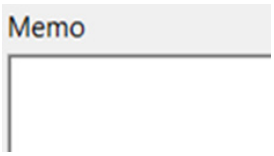
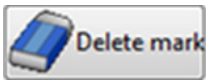
Operating instructions

1		This enables you to enter notes to marked positions.
2		This saves mark information. This creates a new mark if the position is not currently marked. If the position is currently marked, the note information is overwritten.
3		This deletes the mark. The operation of this button is only effective when “Mark” is clicked at a marked position.

Notes

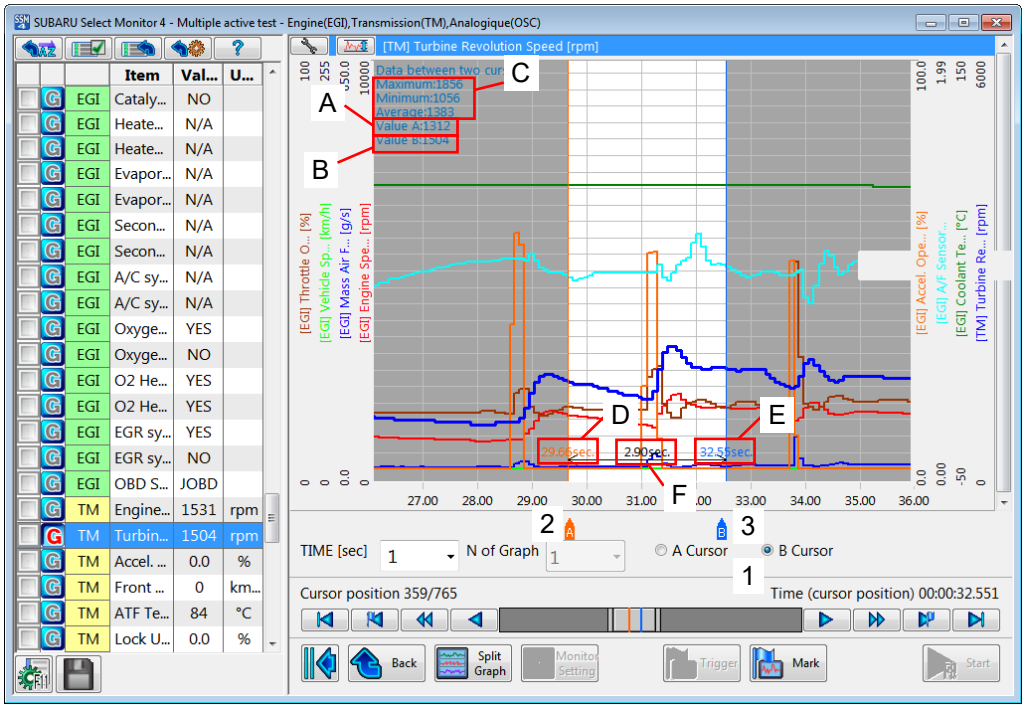
- The confirm data overwrite screen displays if you try to close the data monitor without saving after changes were made to the display state.

17-11. 2-cursor analysis

2-cursor analysis enables you to add the values of any two points of measured data and the maximum, minimum, and average values between these two points.

- Click the - “2-cursor analysis” on the split graph display screen or combo graph display screen to display the 2-cursor analysis screen.

2-cursor analysis screen



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Screen layout

A	Value A: *	This displays the signal value at the A cursor position.
B	Value B: *	This displays the signal value at the B cursor position.
C	Maximum:* Minimum:* Average:*	This displays the maximum, minimum, and average values between the two cursor positions.
D	*.** sec. (red characters)	This displays the time for the A cursor position.
E	*.** sec. (blue characters)	This displays the time for the B cursor position.
F	*.** sec. (black characters)	This displays the difference in time between the two cursor positions.

Operating instructions

1	A Cursor B Cursor	This switches over the selection of the main cursor. This displays the signal value or information on cursor positions according to the position of the selected main cursor.
2		Drag the icon to move the position of cursor A.
3		Drag the icon to move the position of cursor B.

18. Analog Sampling

The analog data can be measured using an oscilloscope and oscilloscope software.

Notes

- This function can be implemented only when the interface box being used is the DST-i (model equipped with LCD).
- Obtain the oscilloscope software from the Denso Homepage (English).
  Operating Instructions: http://www.ds3.denso.co.jp/gnrl/setup/en/manuals.html
  Software Download: http://www.ds3.denso.co.jp/gnrl/setup/en/Oscillo.html
- There are two oscilloscope software editions: a DST-i unit edition and a computer edition.
- Both the DST-i unit edition and the computer edition use English as their screen display language.
- The oscilloscope functions can measure up to 2ch as a standard. An optional 4ch adapter set is also available for measuring up to 4ch.

19. Combined Scope/PID Data

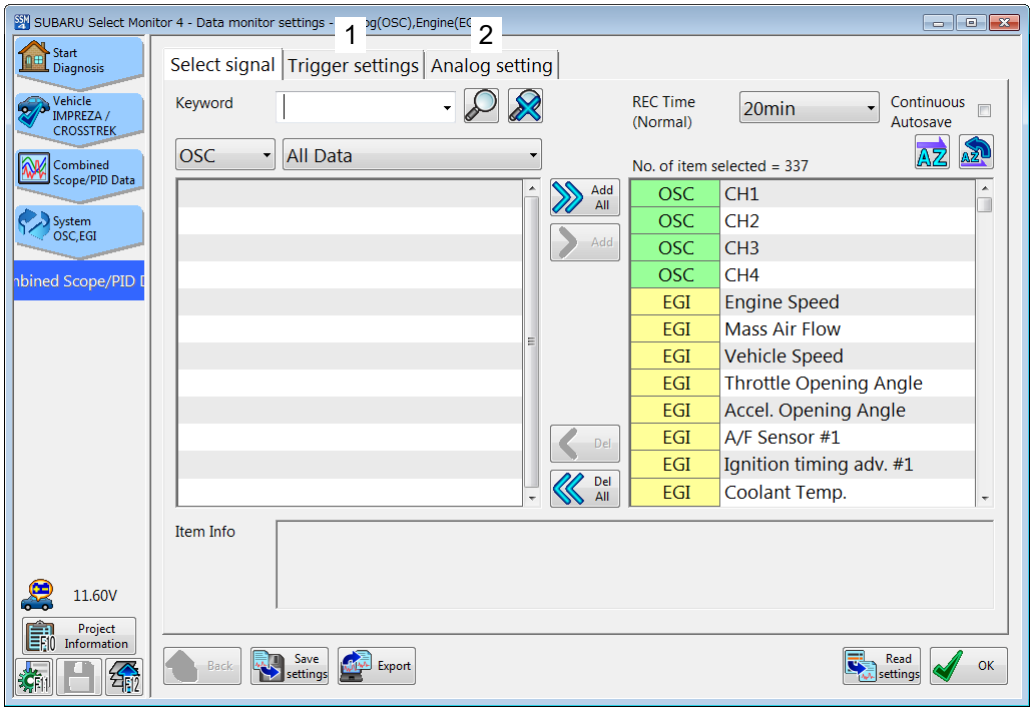
This enables you to measure both analog data and output data into/from the control module at the same time when using an oscilloscope probe.

Notes

- Simultaneous digital/analog measurements cannot be performed if there is no oscilloscope probe installed in the DST-i.
- This function can only be used when the DST-i is used as the interface box and is a model that comes with the oscilloscope.
- The screen displays and operation are mostly the same as that for the “Data monitor”.
  The following section describes the differences of the simultaneous analog measuring function.
  Refer to “11. Data monitor” and “16. Multiple data monitor” for basic information.

19-1. Select signals

Select signal screen



SMU-00184

This enables you to select the analog measured signal (ch. 1-4).
“OSC” is displayed to the left of the analog measured signal name.

Notes

- “ch. 1” refers to the signal input from the oscilloscope probe connected to the DST-i on channel 1.
  Similarly, “ch. 2”, “ch. 3”, and “ch. 4” refer to the channel from which signals are input.

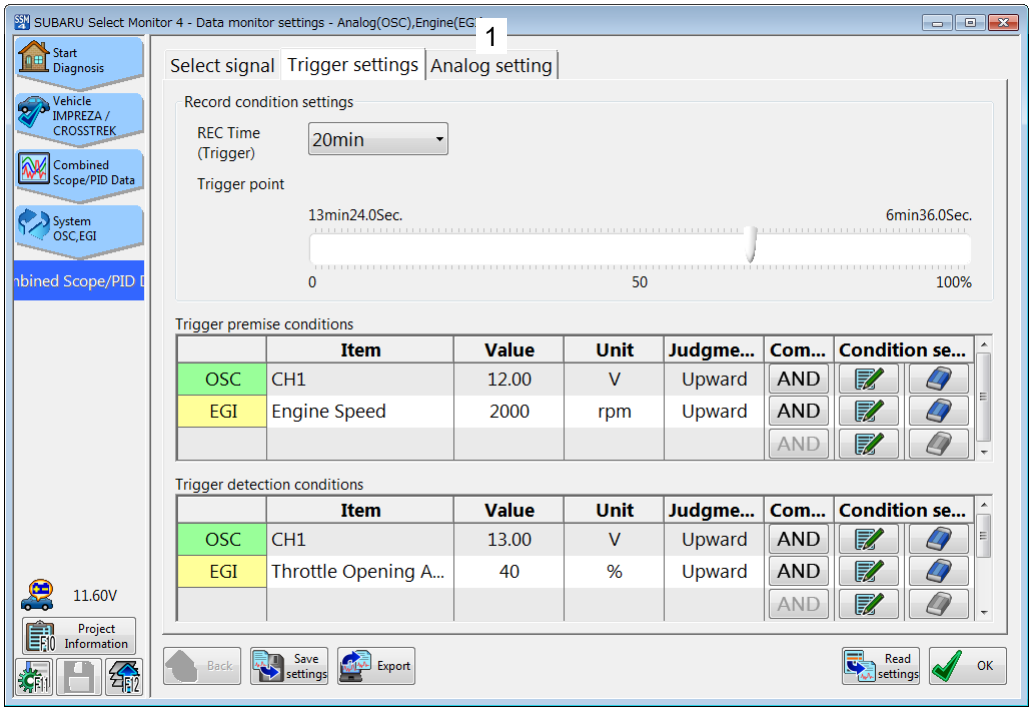
This enables you to configure trigger detection conditions for the analog measured signals.
Refer to “19-2. Trigger settings” for more information.

This enables you to configure conversion rates and offsets used when displaying the analog measured signals.
Refer to “19-3. Analog settings” for more information.

19-2. Trigger settings

- Click the <1> “Trigger settings” tab on the select signal screen to display the trigger settings screen.

Trigger settings screen



SMU-10031

This enables you to configure trigger detection conditions for the analog measured signals (ch. 1-4).
“OSC” is displayed to the left of the analog measured signal name.

Notes

- Analog measured signal items, values, and units are displayed in accordance with the analog settings. The defaults are displayed when analog settings have not been changed.
  After adding conditions to the analog measured signals, analog settings changes are automatically updated.

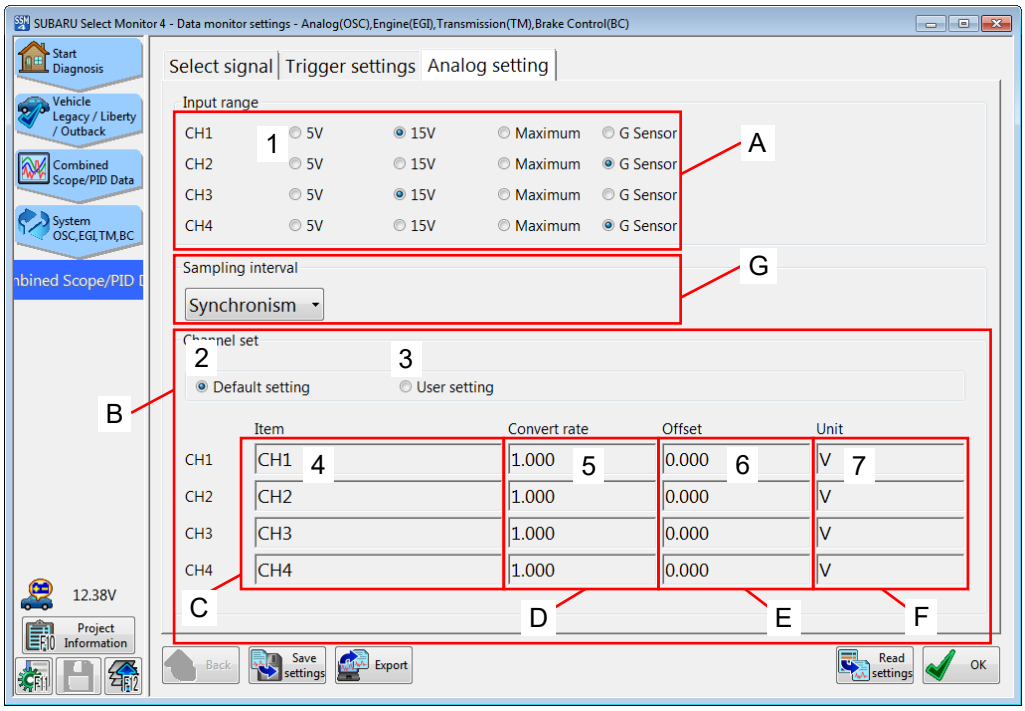
19-3. Analog settings

The analog settings includes input range and channel settings.

This also enables you to save configuration data and load saved configuration files.

- Click the <2> "Analog settings" tab on the select signal screen or the <1> "Analog settings" tab on the trigger settings screen to display the analog settings screen.

Analog settings screen



SMU-00186

Screen layout

A	Input range	This displays the input range for each channel. The input range is selected by clicking the radio button to the left of each item. The following ranges are available for each item. • 5 V: -5 V to +5 V • 15 V: -15 V to +15 V • Maximum: -150 V to +150 V • G sensor: -5V to +5V When measuring the G sensor output with the optional switch box cable, select a “G sensor”. The output destination channel of each G sensor is as follows. CH2: X-axis output CH3: Y-axis output CH4: Z-axis output Do not select the G sensor for CH1 because the switch box cable cannot physically connect to it.
B	Channel set	This displays the status of channel settings. The channel setting method is selected by clicking the radio button to the left of each item.
C	Item	This displays the channel name of each channel. This enables you to change this as desired.
D	Conversion rate	This displays the conversion rate for each channel. This displays values as they are measured in accordance with the multiplier configured for analog measured signal values.
E	Offset	This displays the offset value for each channel. This displays sum values as they are measured in accordance with the additional value configured for analog measured signals.
F	Unit	This displays the unit of measurement for each channel. The configured units are displayed on screen during measuring.

G	Sampling interval	Displays the signal sampling interval for analog measurements. Signals during analog measurements are sampled at the same interval as control module measurements, when "Synchronism" is selected.

Operating instructions

1		This enables you to select the input range for each channel.
2		Selecting this will return the “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel to their default settings. Item settings cannot be changed when the default settings are selected.
3		Selecting this enables you to change the settings of “Item”, “Conversion rate”, “Offset”, and “Unit” for each channel.
4		Channel names can be entered as desired when “User settings” is selected.
5		The conversion rate value can be entered as desired when “User settings” is selected.
6		The offset value can be entered as desired when “User settings” is selected.
7		Units of measure can be entered as desired when “User settings” is selected.

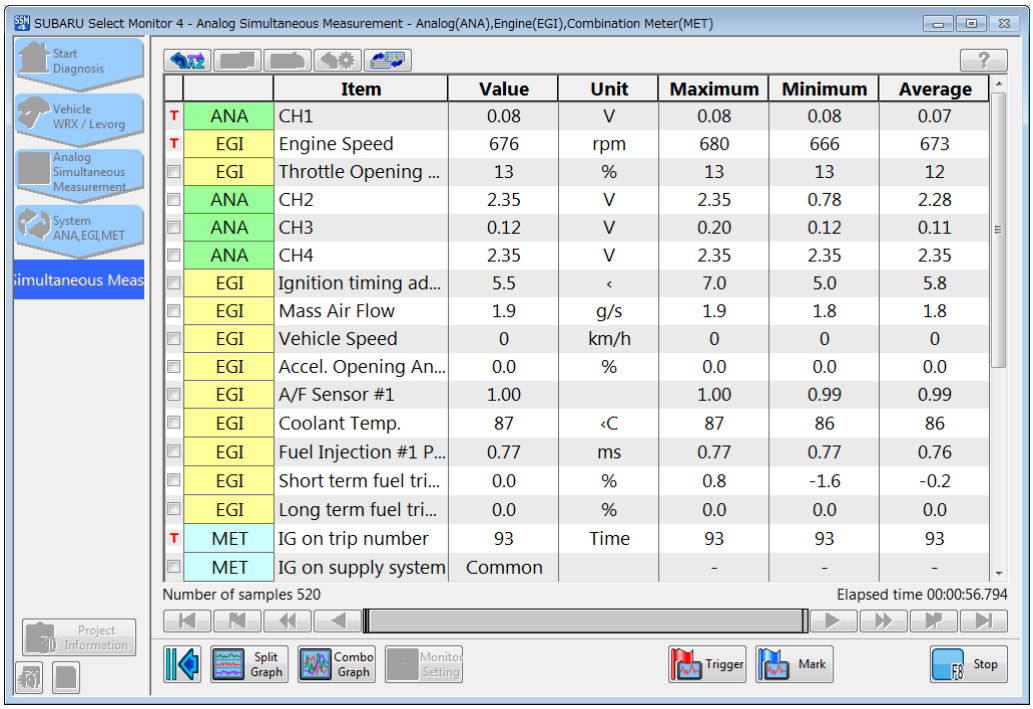
Notes

- All settings for analog measured signals (ch. 1-4) can be changed.
  Settings can be changed even when not selected on the select signal screen.
- Input the following values in the conversion rate and offset columns in the analog settings if you want to display G sensor output values as physical quantity (unit: G):
  Conversion rate: 1.515
  Offset: -2.5
  Unit: G

19-4. Example of screen displays

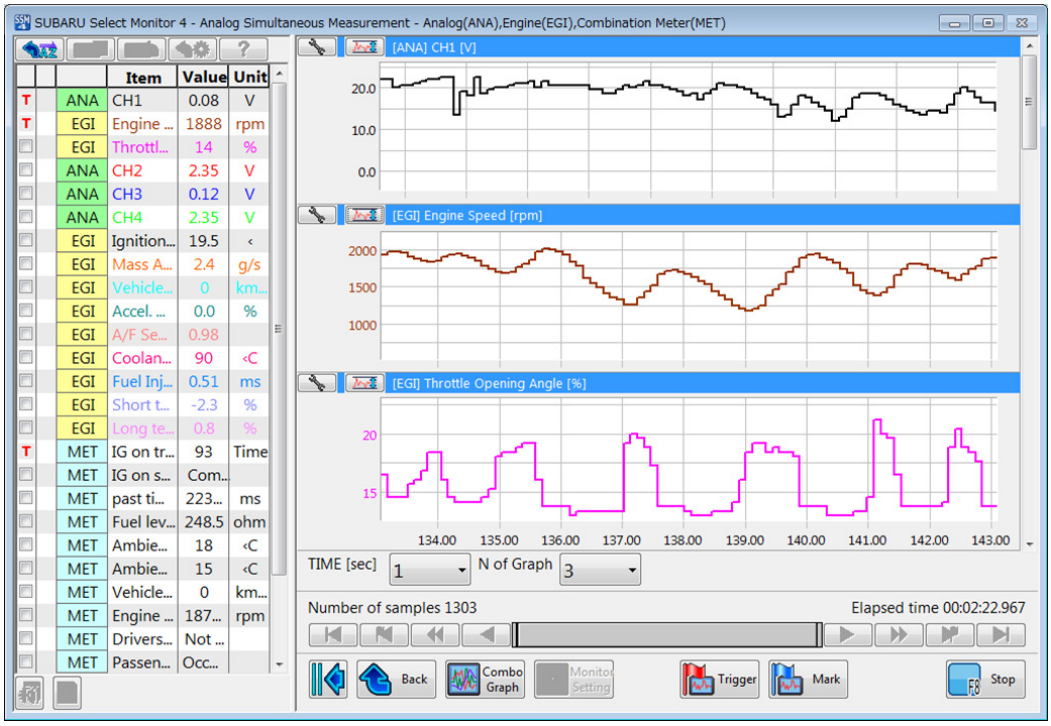
The following example is the screen displayed after analog settings.

List display screen



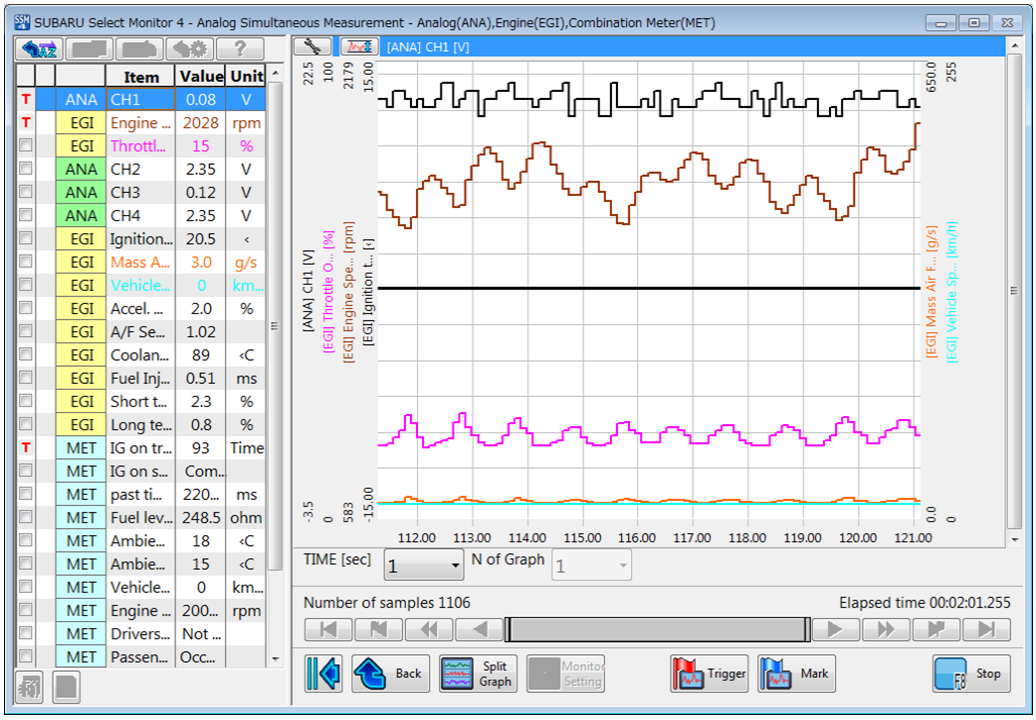
SMU-00187

Split graph display screen



SMU-00188

Combo graph display screen



SMU-00189

20. Guideline for reprogramming procedure

The SSM4 has a pass-thru (J2534-1) reprogram function. This section explains the procedure for reprogramming with the SSM4.

20-1. Notes on doing control module reprogramming

20-1-1. Before starting

- Reprogramming cannot be executed if a Bluetooth connection is used. Be sure to use a USB connection to execute reprogramming.
- Do reprogramming more than 50 m (164 ft) away from high voltage wires.
- Do reprogramming more than 10 m (33 ft) away from equipment that might emit high voltage.
- Do reprogramming more than 2 m (7 ft) away from equipment that emits electronic noise (such as a vehicle having its ignition checked).
- Do reprogramming more than 2 m (7 ft) away from electronic devices that emit radio waves (such as cellular phones or pagers).
- Before starting the reprogramming, turn off all the electric equipment (such as the ignition system, audio system, cigarette lighter, or power seats).
- Reprogramming automatically turns off if the ambient temperature falls below 0°C (32°F).
- Before reprogramming, be sure to set the PC power management to “Always ON”. Failure to set to “always ON” may cause communication error due to PC power down on the way of reprogramming resulting in reprogramming failure.
- Before reprogramming, confirm DTC on all control module including the control module for reprogramming. If you find DTC, please restore the parts, which have problems. Always execute [Clearing Memory] after restoring the locating fault.

20-1-2. During reprogramming

- Do not touch any switches in the vehicle.
- Do not touch the pedals, and do not open or close the doors.
- Stay near the car.
- Do not touch the cables or connectors, and do not move the interface box.
- Even if some of the warning lights in the combination meter turn on during reprogramming or displays “ErrHC”, “ErrEG” or etc. in multi-information part, these are not errors.

20-1-3. After reprogramming

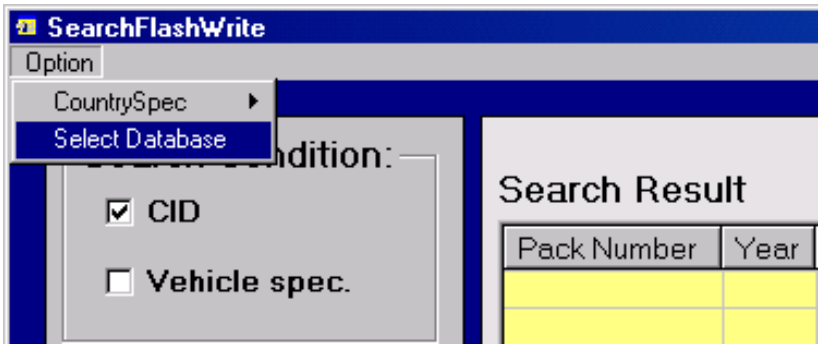
- When reprogramming completes, DTC related to the CAN communication might remain in the unit for the CAN communication. In that case, always execute [Clearing Memory].

20-2. Control module reprogramming (Except for VDC of BRZ)

- Turn the ignition switch OFF.
- Connect the Delivery Mode fuse.

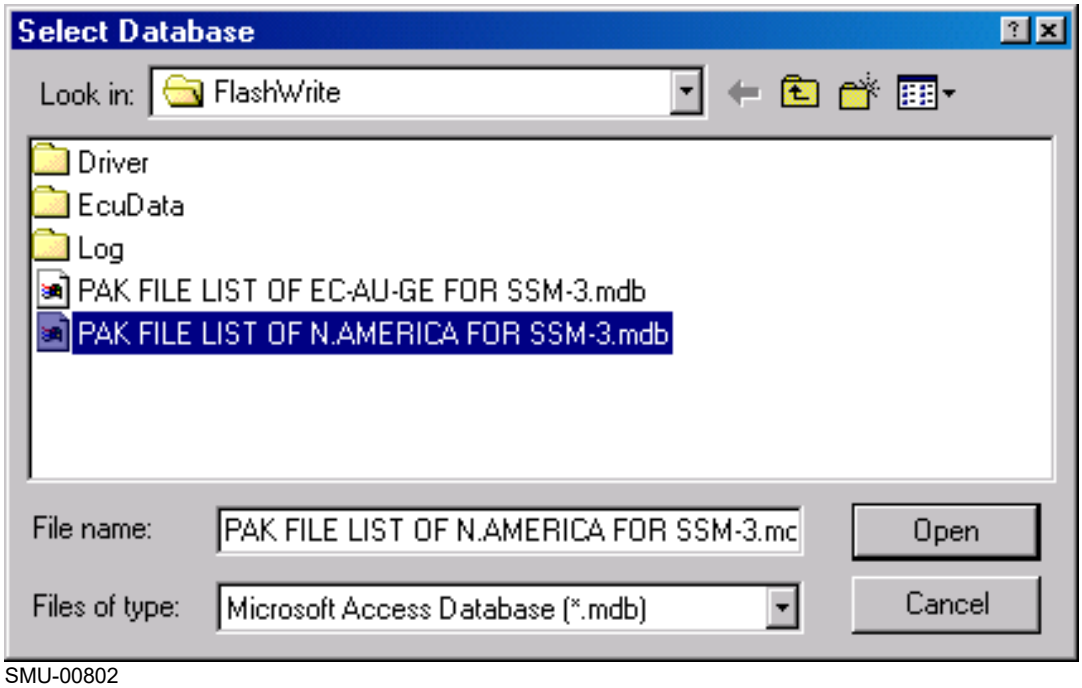
Notes
- The jumper harness may need to be attached separately depending on the type of vehicle.
- Do not use the fuse which equipped on vehicle.
- Make sure the vehicle's ignition switch is off before connecting or disconnecting the delivery mode fuse (test mode connector).

- Use the diagnosis cable or datalink cable to connect the interface box to the datalink connector of the vehicle.
- Connect the interface box to the PC with the USB cable.
- Turn on the vehicle's ignition switch.
- Double-click the SSM4 icon on the PC screen to start up the SSM4 application. This causes the Main Menu to appear.
- Select [Reprogram] from the Main Menu to execute it.
- This displays Serch FlashWrite screen. Select "Select Database" from "Option" in menu.



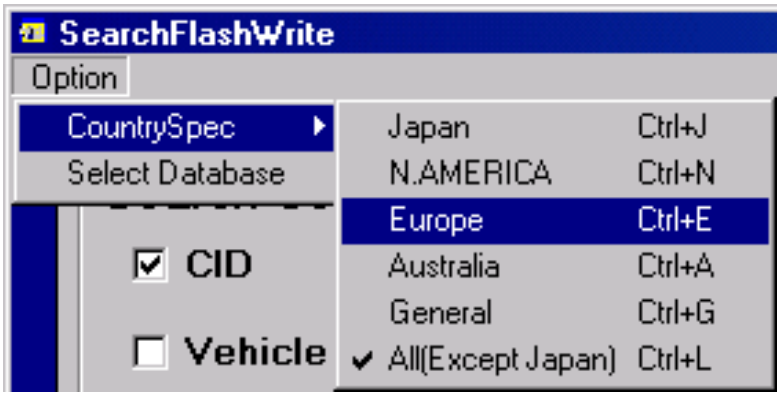
SMU-00801

- This displays the Select Database window. Select the desired database file (.mdb file) and click the [Open] button.



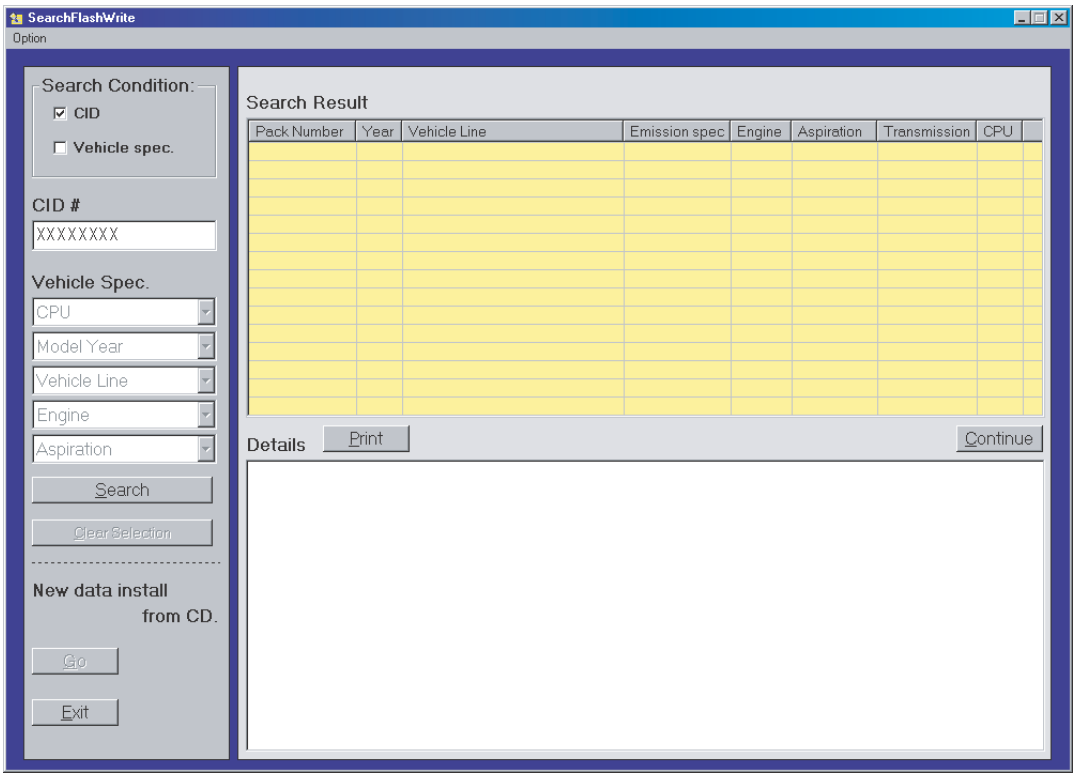
SMU-00802

- Select “CountrySpec” in menu to select desired destination. This causes search conditions of PAK file to be refined for selected destination.



SMU-00803

- In the Search FlashWrite screen, check the CID check box, input the CID of the control module that you are going to reprogram, and then click the [Search] button to find the PAK file. If you don’t know the CID of the control module, use the vehicle specifications to find the PAK file.

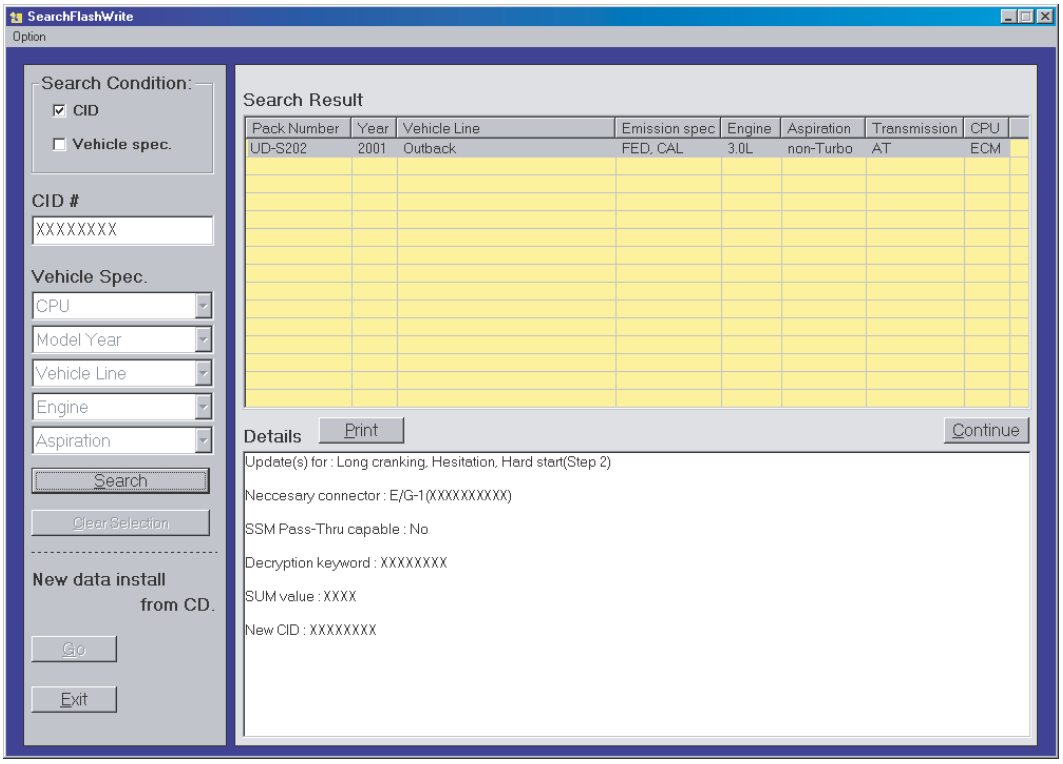


SMU-00686

Notes

- If no search results are displayed when Vehicle spec. is selected as a Search Condition, you can clear the search items by pressing the [Clear Selection] button to return the selected search items to their initial status.

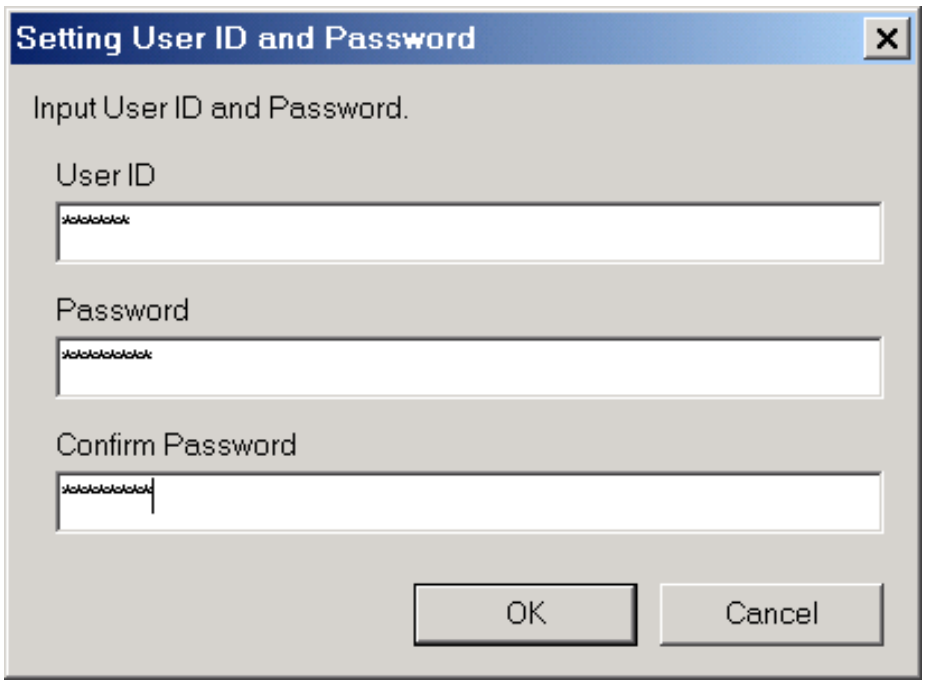
- Check the results of the search, then double click the PAK file listed in the Pack Number column, or after clicking to make a selection click the [Continue] button.



SMU-00687

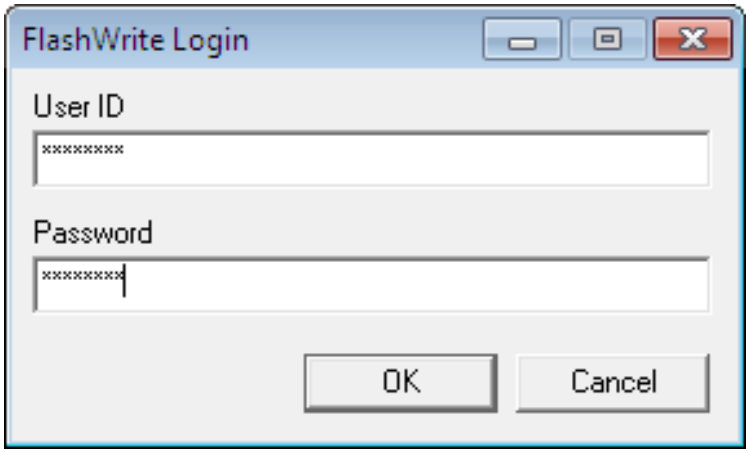
Notes
- You can print out information of the selected items in Search Result column and each of their detailed information by clicking the [Print] button.

- When reprogramming is executed for the first time after the PC application has been installed, the User ID and Password setting screen is displayed. At this time, set the desired User ID and Password.



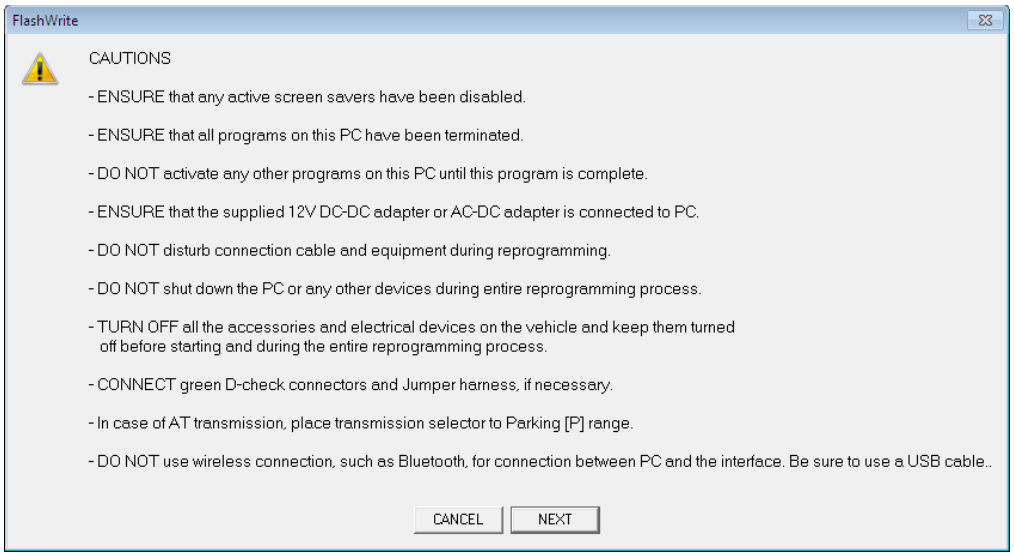
SMU-00407

- The Login screen is displayed. Enter your User ID and Password.



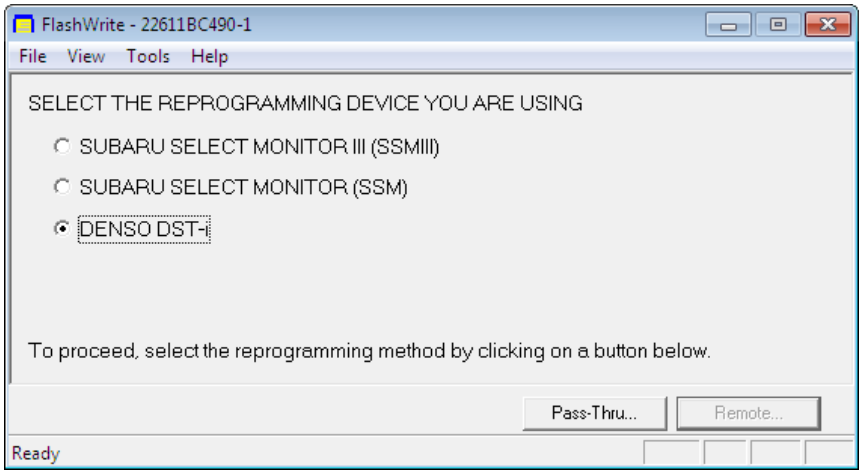
SMU-01572

- A list of items that require special attention during reprogramming is displayed. Read the caution items and then click the “Next” button.



SMU-01573

- Select the reprogramming device you are using (in this case, select DENSO DST-i), and then click the [Pass-thru] button to start reprogramming.



SMU-01574

Notes
- Depending on the PAK file to be selected, the “Pass-Thru” button may not be clickable and reprogramming may therefore not be possible. In this case, change the interface box to SDI and execute reprogramming from the SSMIII PC application. For the operating procedure, refer to the SSMIII PC application Help function.

- Perform reprogramming in accordance with the instructions that appear on the screen.

20-2-1. Action to be taken when communication error occurs during reprogramming

The following dialog box will appear when communication error occurs for some reasons such as PC or interface box power OFF, or disconnection of diagnosis cable or USB cable during reprogramming. In this case, refer to the notes below and reprogram again according to the instruction appeared on the screen.
Basically, communication error during reprogramming will not damage the control module. However, be careful that the erroneous action may cause damage to the control module when you take the countermeasure.

SMU-00773

Notes

- When the reprogram is performed using SSM4, the information associated with reprogramming of the control module will be stored in the hard disc of the PC. This information is used in the future reprogramming. Also, this information is overwritten every time the control module is reprogrammed. Therefore, reprogramming becomes impossible when an error occurs but reprogramming is done for another control module before attempting to re-reprogram the affected parts, since the information stored in the hard disc has been overwritten. To prevent this, whenever the communication error occurs, be sure to re-reprogram the affected control module before the information associated with the reprogramming in the hard disc is overwritten. The information stored in the hard disc will not be erased even if the PC power is OFF.

20-3. Control module reprogramming (VDC of BRZ)

In this item, it has been described for the steps of the VDC reprogramming (BRZ) using the CUW (Calibration Update Wizard).

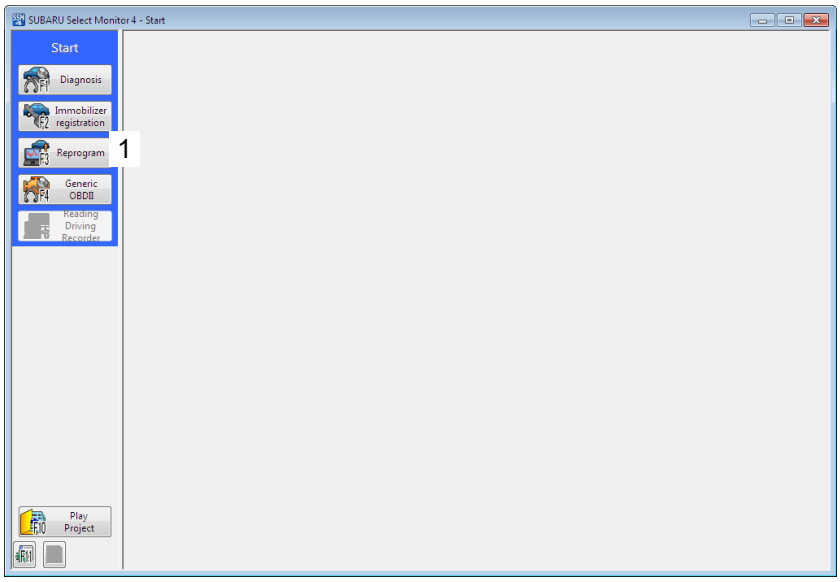
Notes

- Reprogramming using the CUW is only possible to VDC of BRZ.

- Use the diagnosis cable or datalink cable to connect the interface box to the datalink connector of the vehicle.
- Connect the interface box to the PC with the USB cable.
- Turn on the vehicle’s ignition switch.

20-3-1. When start CUW from SSM4 application

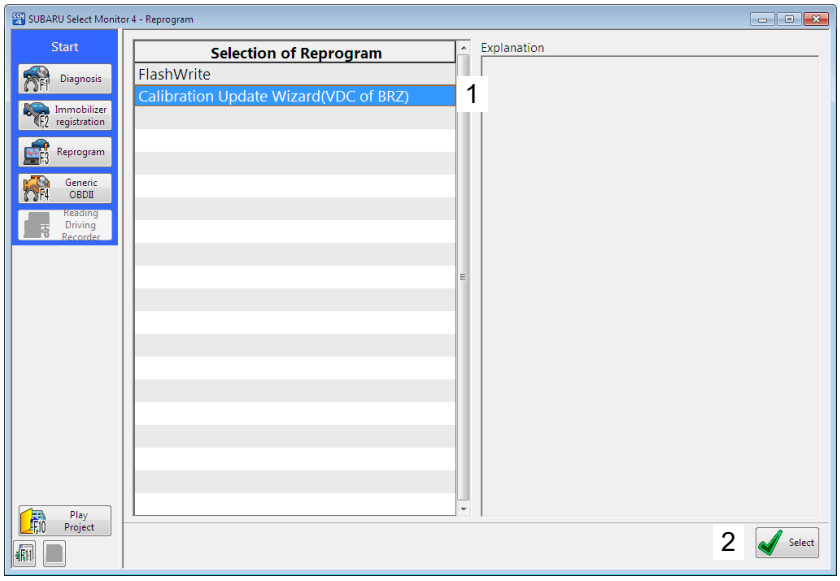
Main menu screen



SMU-00204

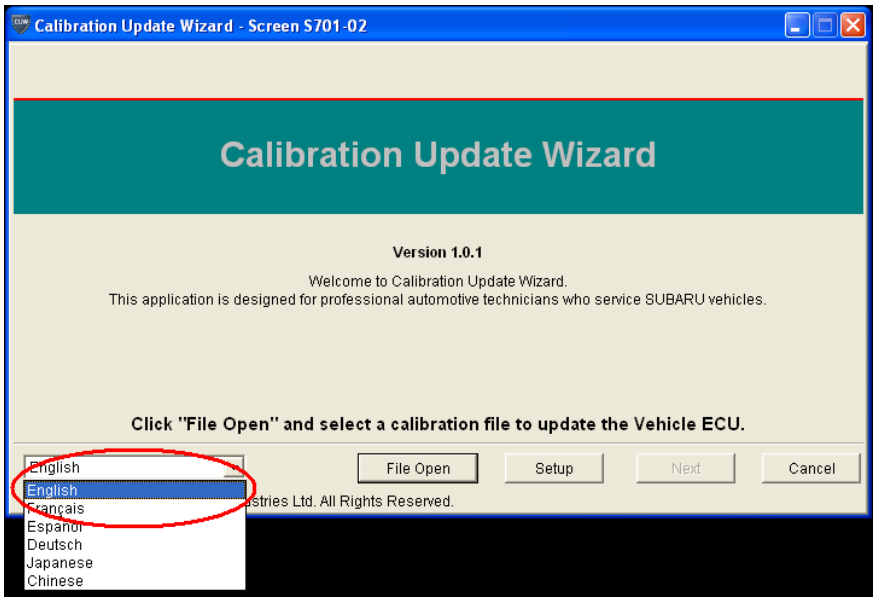
- Click <1> “Reprogram” on the main menu screen to display the Selection of Reprogram screen.

Selection of Reprogram screen



SMU-00218

- You select the "Calibration Update Wizard (VDC of BRZ)" from the system list of Reprogram selection screen. When you click the "Select", Calibration Update Wizard will start.

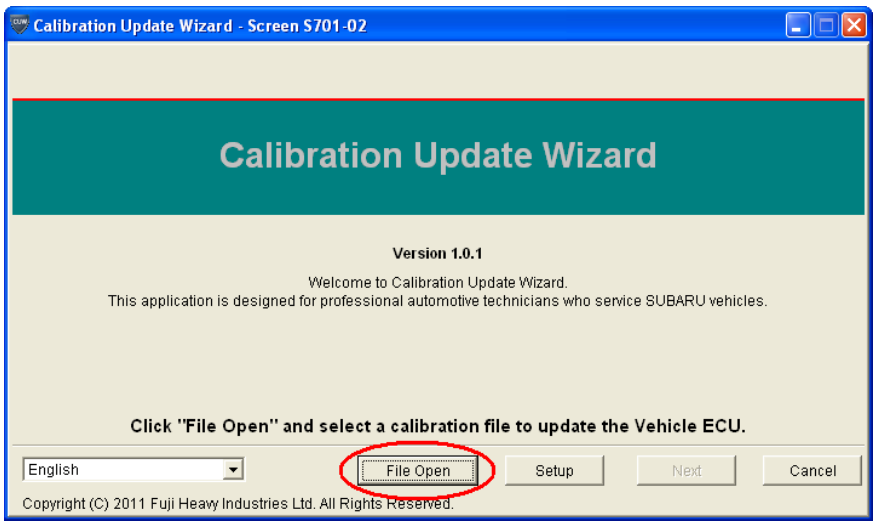


SMU-01361

- Set an indication language. (As an example, "English" is selected.)

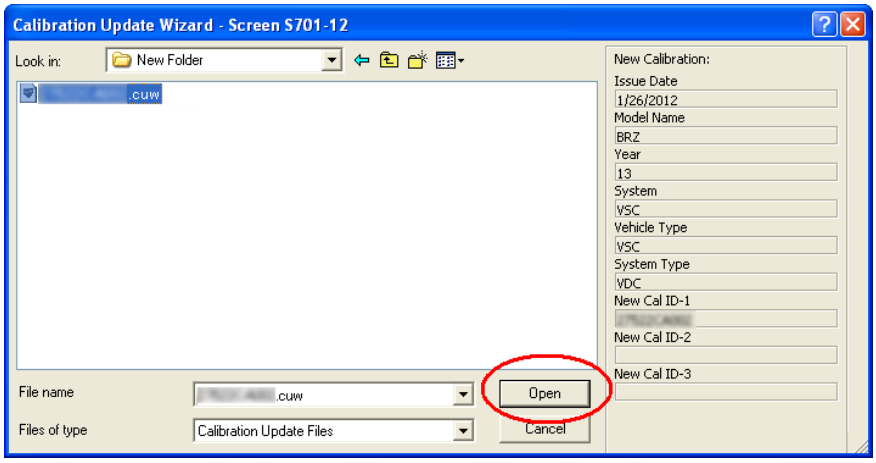
Notes

- By initial setting, always set in English.



SMU-01362

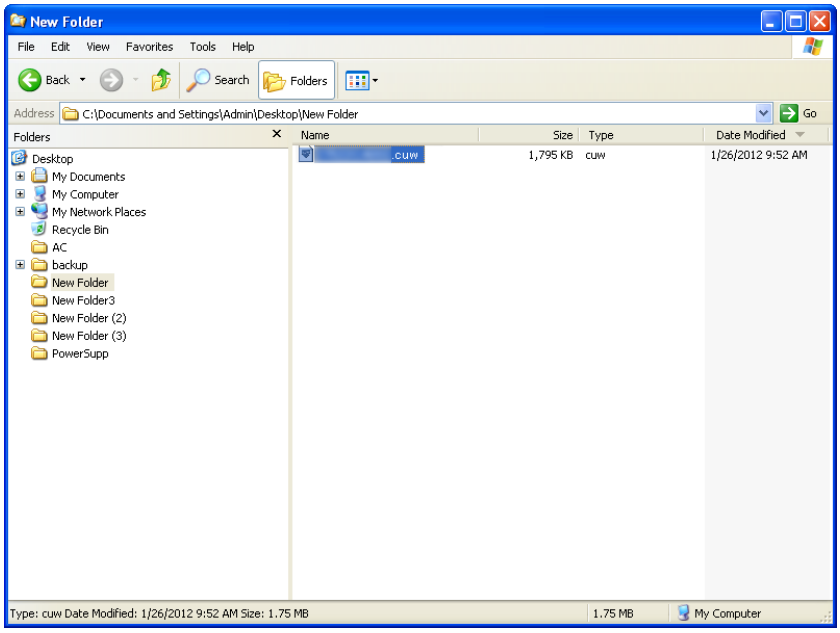
- After having confirmed setting contents, click the [File Open] button.



SMU-01363

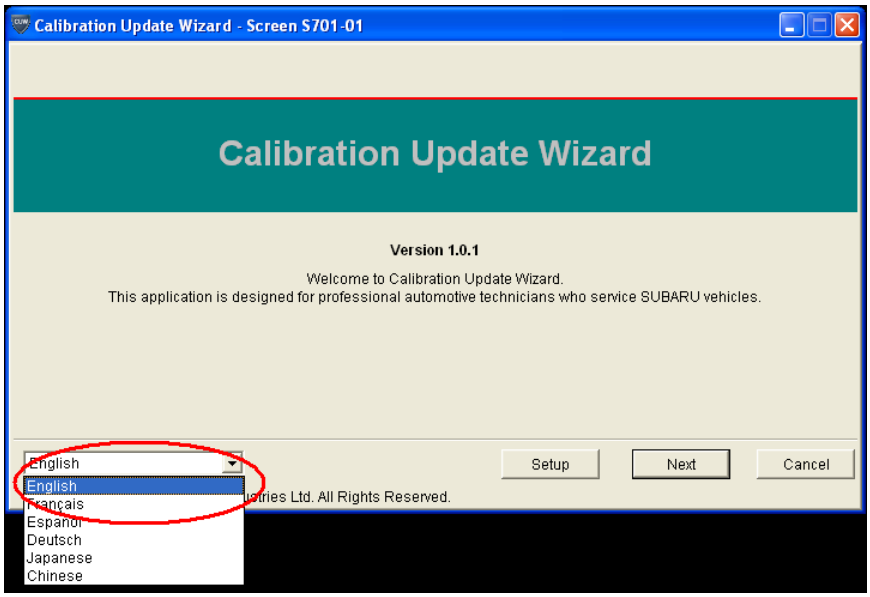
- Choose cuw file, click a [Open] button

20-3-2. When start CUW from cuw file



SMU-01364

- Choose cuw file and double-click.

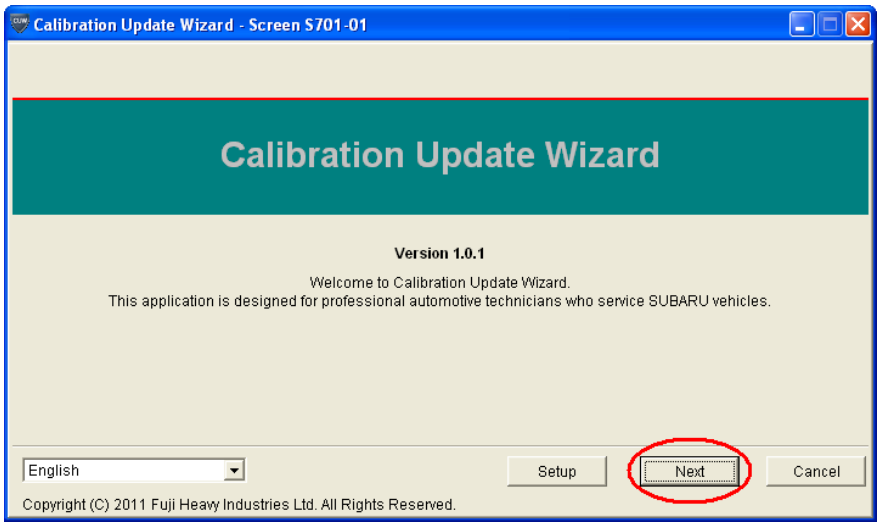


SMU-01365

- Set an indication language. (As an example, "English" is selected.)

Notes

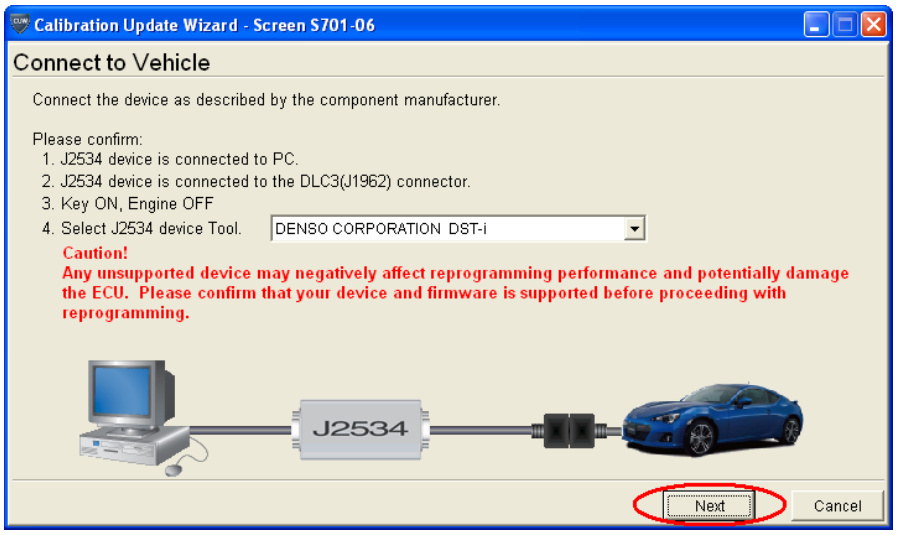
- By initial setting, always set in English.



SMU-01366

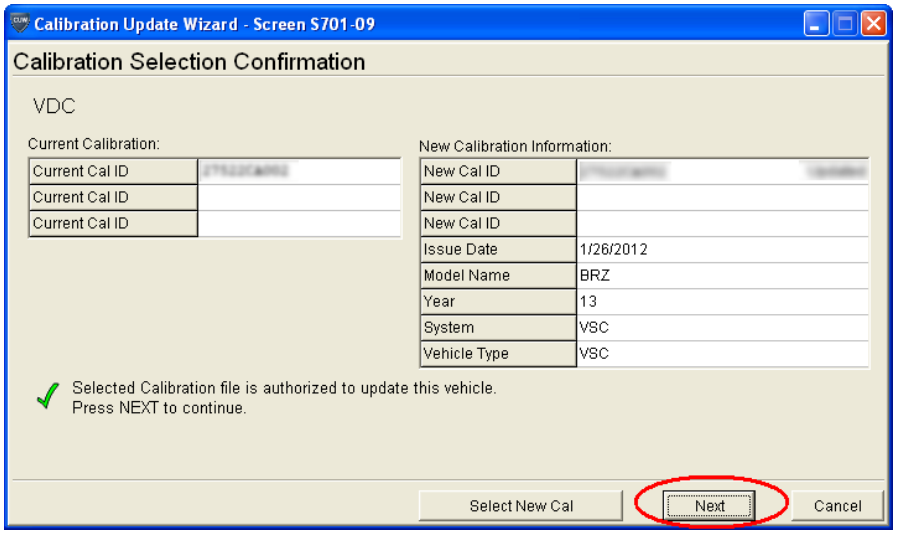
- Click the [Next] button.

20-3-3. Perform the Reprogram



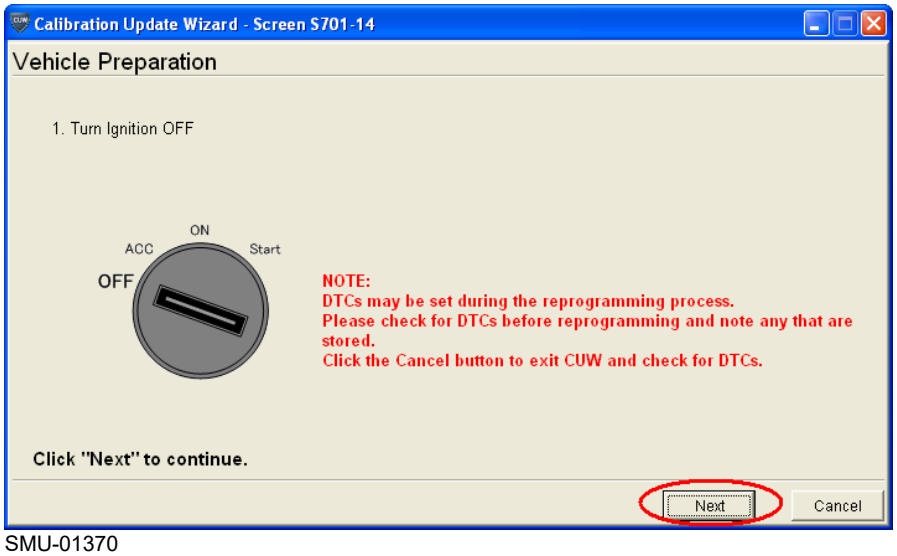
SMU-01367

- Click the [Next] button.



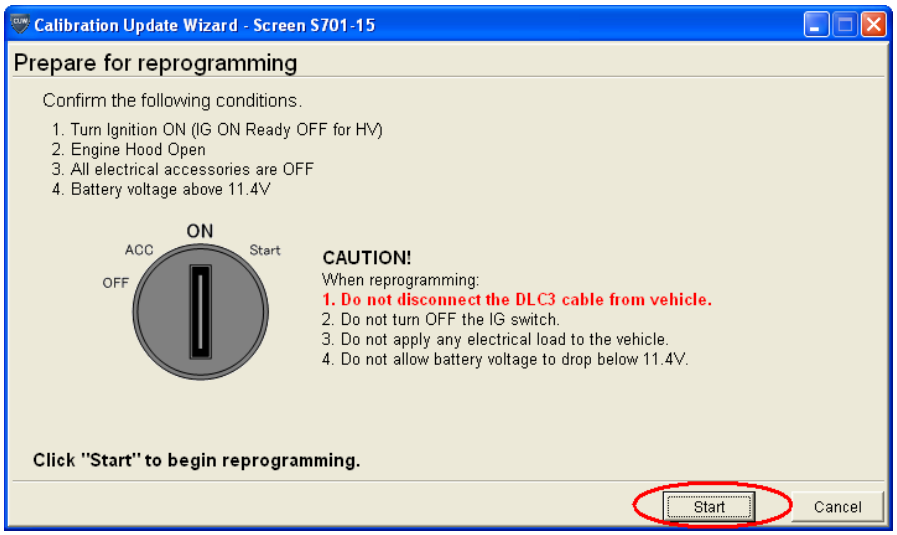
SMU-01369

- Click the [Next] button.



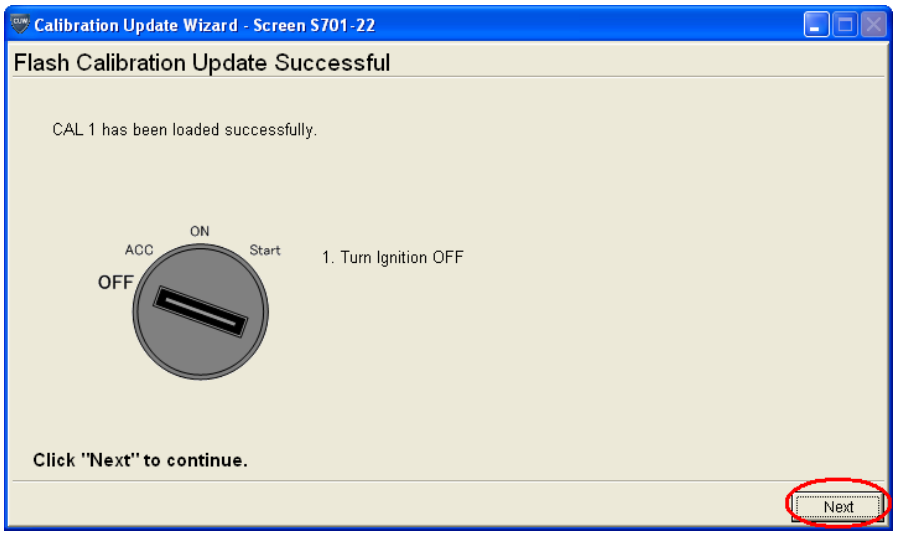
SMU-01370

- Confirm message content and click [Next] button.



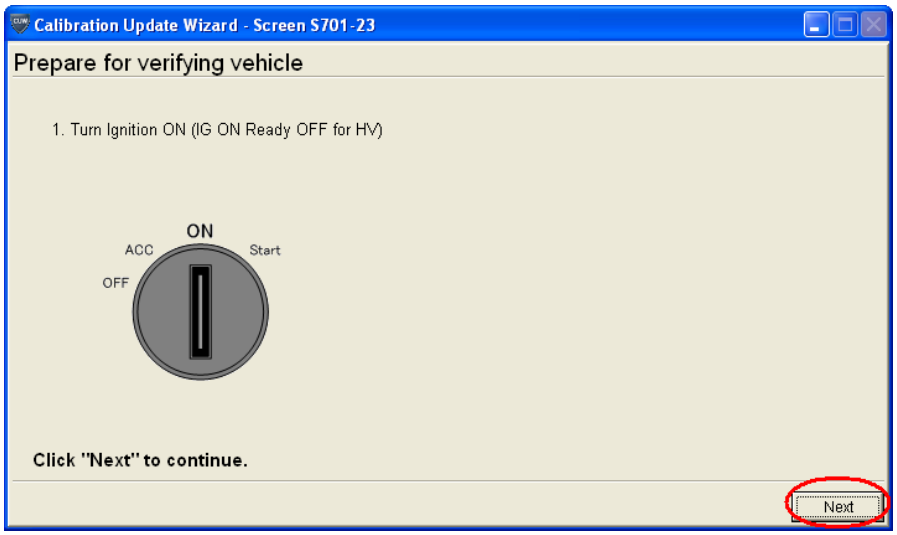
SMU-01372

- Confirm message content and click [Start] button.



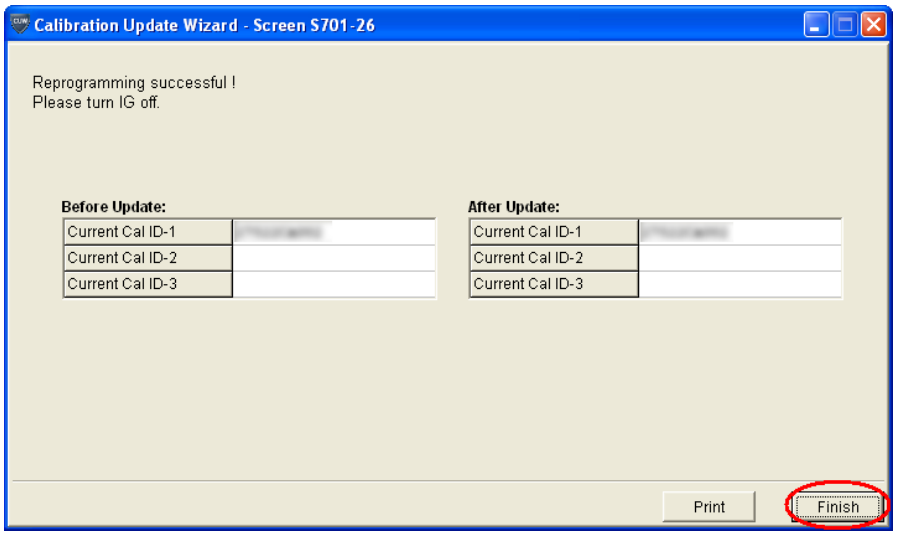
SMU-01374

- Confirm message content and click [Next] button.



SMU-01376

- Stand by as the message below will appear on the screen.



SMU-01378

- The screen shown below will appear if reprogram ends normally. Confirm message content and click [Finish] button.

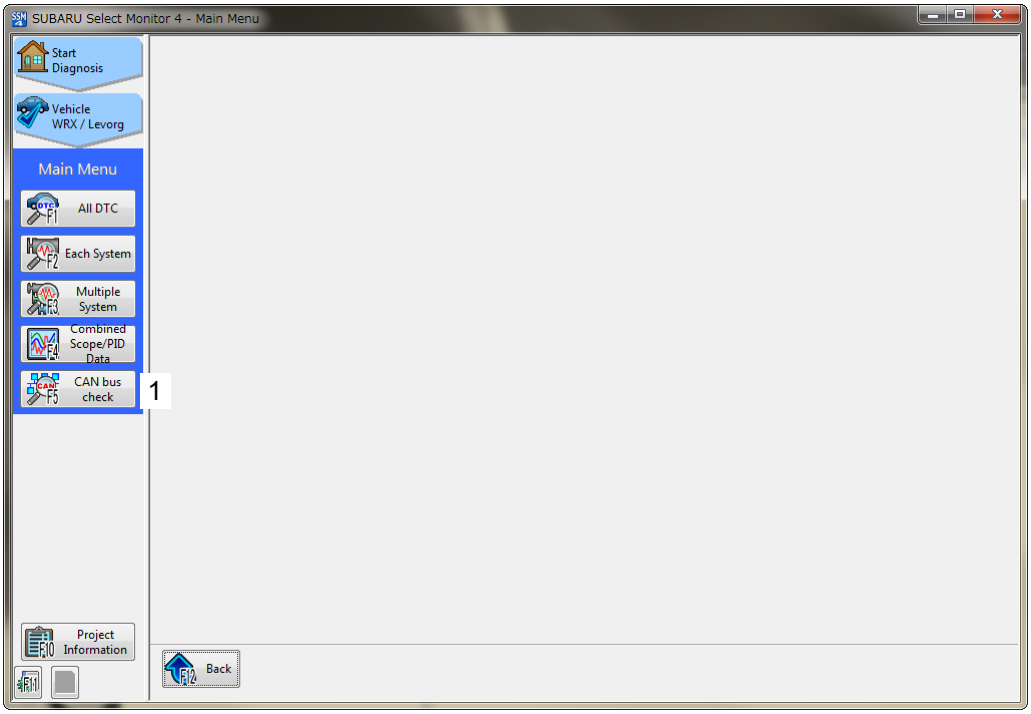
21. CAN bus check

This enables you to check the ECU connected to the CAN bus and also check the communication state of each system.

Notes

- The CAN bus check cannot be performed when the CAN bus is not connected to the data link connector (DLC).

Main menu screen

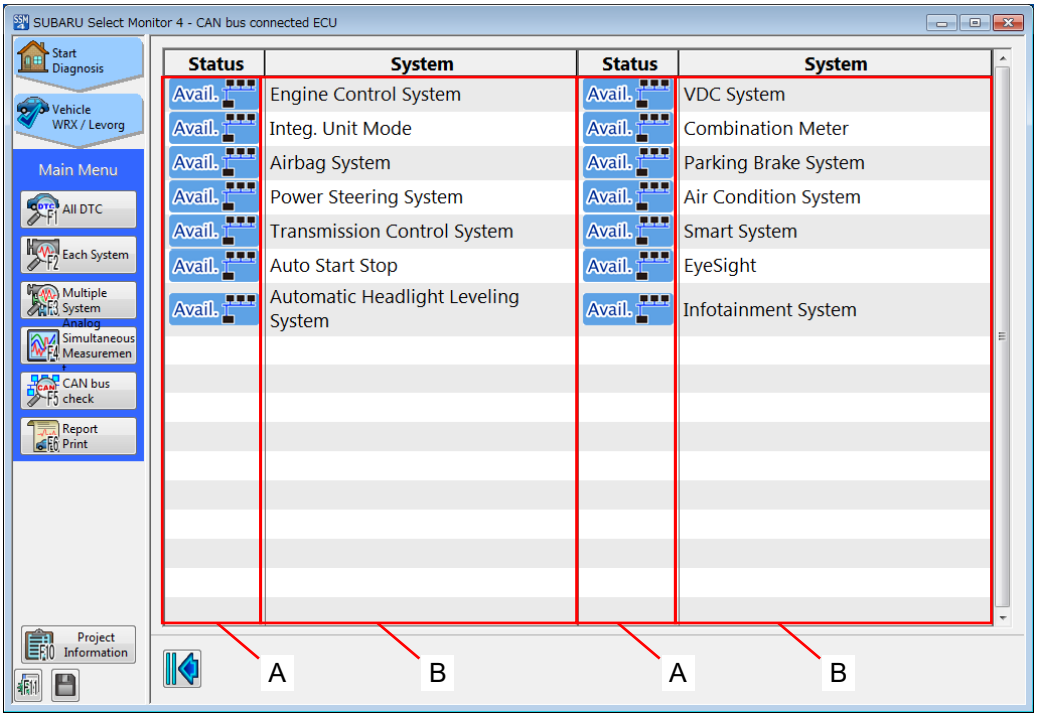


SMU-00190

- Click <1> “CAN bus check” on the main menu screen to display the results display screen.

Notes
- Display / non-display of the “CAN bus check” button is controlled by the diagnosis vehicle.

Results display screen



SMU-10026

Screen layout

A	Status	This displays the ECU communication state. Refer to the following table on status types.
B	System	This displays the name of the system for which the CAN bus check was performed.

Status types

	This shows the communication is normal.

22. Immobilizer registration

Notes

- This function may not be usable depending on the destination of the software.
- Refer to the immobilizer registration manual for more information on registering immobilizers.
- The G/H/I-type immobilizer needs a connection to the Internet.
- The G/H/I-type immobilizer needs an input of the "Authentication key of a server connection for diagnosis", depending on the work item.
- The "Authentication key of a server connection for diagnosis" is periodically changed by the dealer. Always use the latest authentication key.

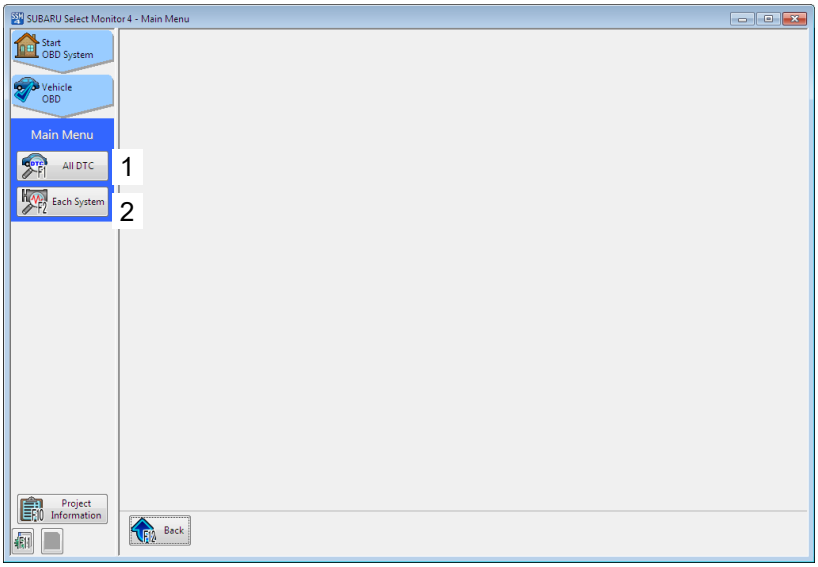
23. OBD System

Vehicle fault diagnosis can be performed by checking the OBD system control parameters.

Notes

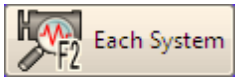
- This function cannot be performed if the vehicle is not equipped with an OBD system.
- When “Generic OBDII” is selected from “Start menu screen” just after starting SSM4, the measured data cannot be saved in the project.
  To save the measured data in the project, select the vehicle from “Diagnosis” on the “Start menu screen” and select “Generic OBDII” from the “Main menu screen”.

Main menu screen



SMU-00205

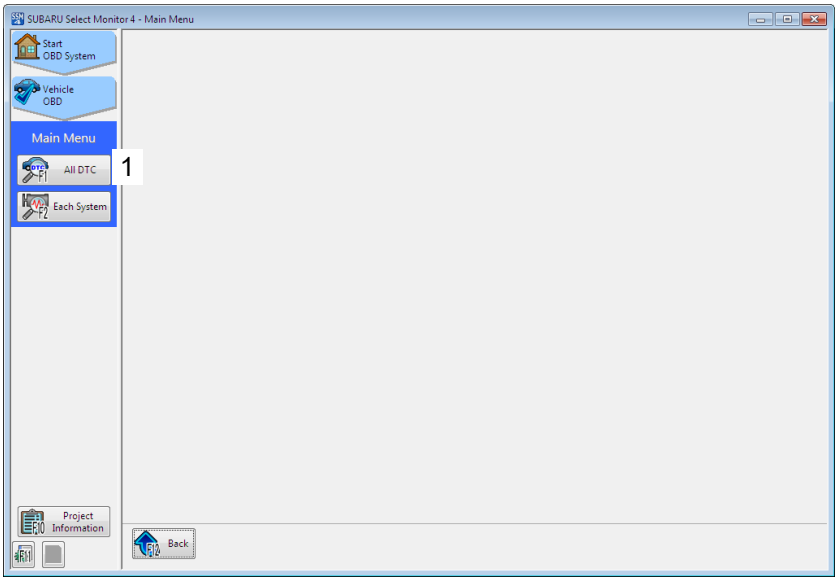
Operating instructions

1		{All DTC Inspection} Control module failure detection status of OBD system can be confirmed. In addition, you can view the diagnosis code.
2		{Individual System Inspection} From OBD control system corresponding to the SSM4, please select the individual system. You can display information such as input and output data of the control module and diagnosis code. Erase the diagnosis code stored in the control module, display the self-diagnosis results of the specific system or components, operating the system, it can be made like.

23-1. All DTC

Control module failure detection status of OBD system can be confirmed. In addition, you can view the diagnosis code.

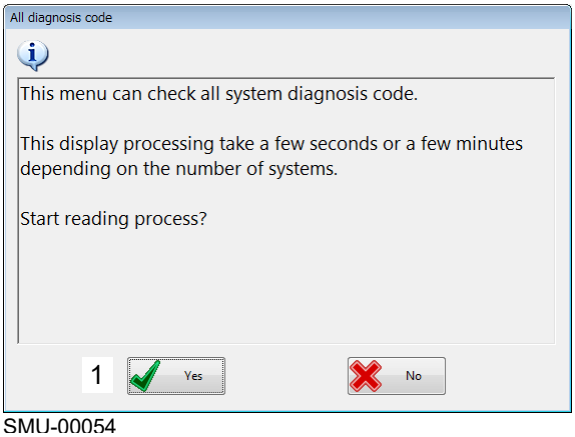
Main menu screen



SMU-00206

- Click <1> “All DTC” on the main menu screen to display the confirm execution screen.

Confirm execution screen



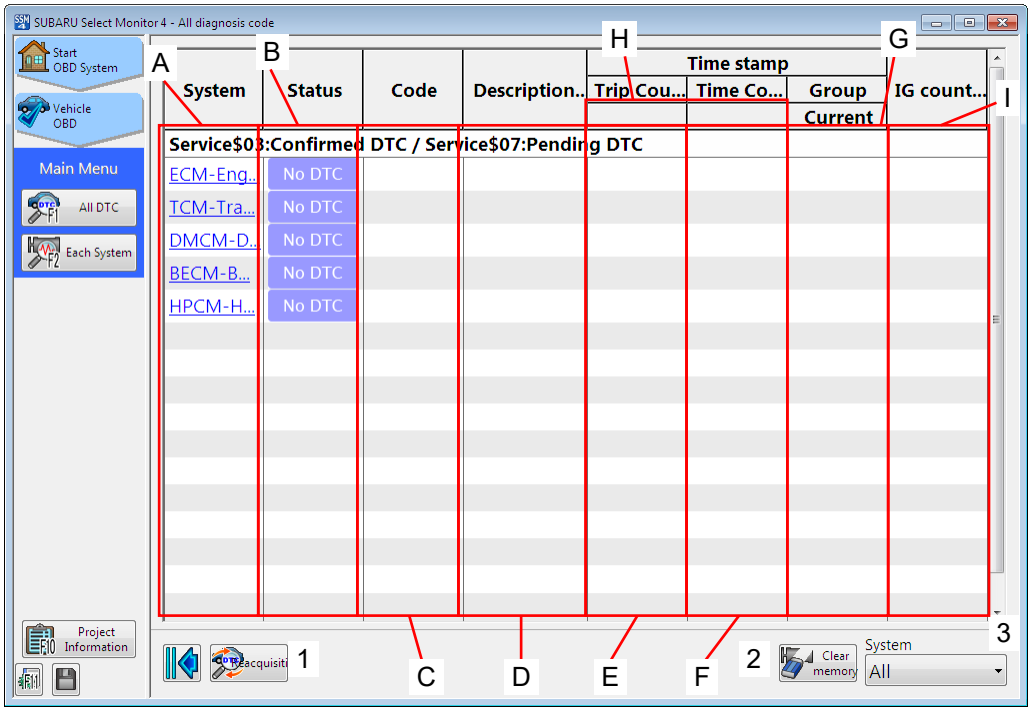
SMU-00054

- Click <1> "Yes" on the confirm execution screen to start reading the DTCs.
- When all DTCs from all systems have been read, the all DTC display screen displays.

Notes

- Click “Stop” while the DTCs are being read to stop the read process.
  Once stopped, the DTCs that were read from systems are displayed on the all DTC display screen. A status of “Not performed” is displayed for systems that were not yet read.

All DTC display screen

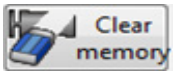


SMU-00207

Screen layout

A	System	This displays the name of the system. Click the system name display to display DTC display screen for that system or the select function screen. Clickable system names are displayed using blue characters that are underlined.
B	Status	This displays the DTC status. Diagnosis code of Confirmed and Pending is displayed.
C	Code	It displays the diagnosis code stored in the control module. Diagnosis code of Confirmed and Pending is displayed.
D	Description & trouble part	This displays the name of the DTC.
E	Trip count	This displays the trip count. *It does not correspond in the OBD system.
F	Elapsed time that ignition is on	This displays the trip count. The unit is displayed in milliseconds (ms). *It does not correspond in the OBD system.
G	Group	This displays either “Shared” or “Independent”. “Shared” is a counter of data retrieved from BIU. “Independent” is an independent counter in the ECU. *It does not correspond in the OBD system.
H	Current information	This displays the current time for the trip count and the elapsed time after the ignition is on. *It does not correspond in the OBD system.
I	IG counter	This displays the IG counter. *It does not correspond in the OBD system.

Operating instructions

1		Re-reading of the diagnostic code.
2		It will erase the diagnosis code of OBD control module. After that, it will re-read of all the diagnosis code.

3		This filters the display of DTCs from selected systems.

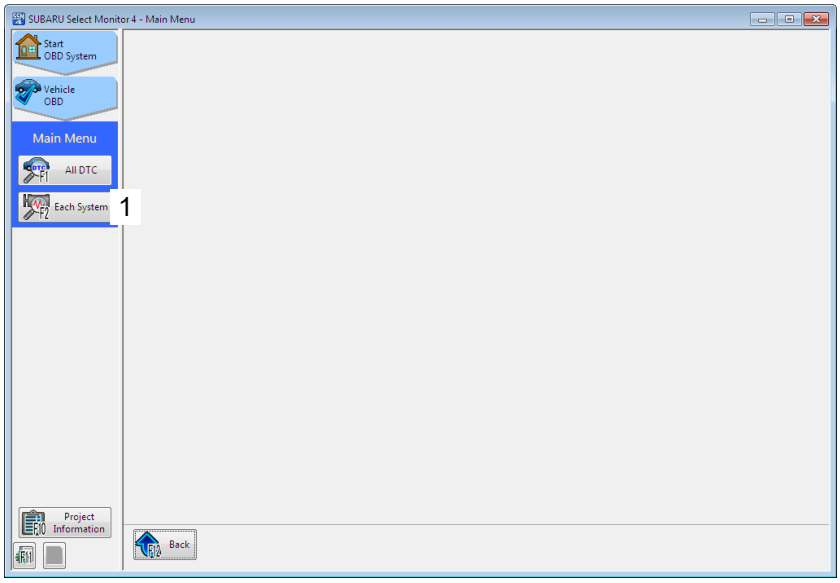
23-2. Each System

From OBD control system corresponding to the SSM4, please select the individual system. You can display information such as input and output data of the control module and diagnosis code.

Erase the diagnosis code stored in the control module, display the self-diagnosis results of the specific system or components, operating the system, it can be made like.

23-2-1. Select system

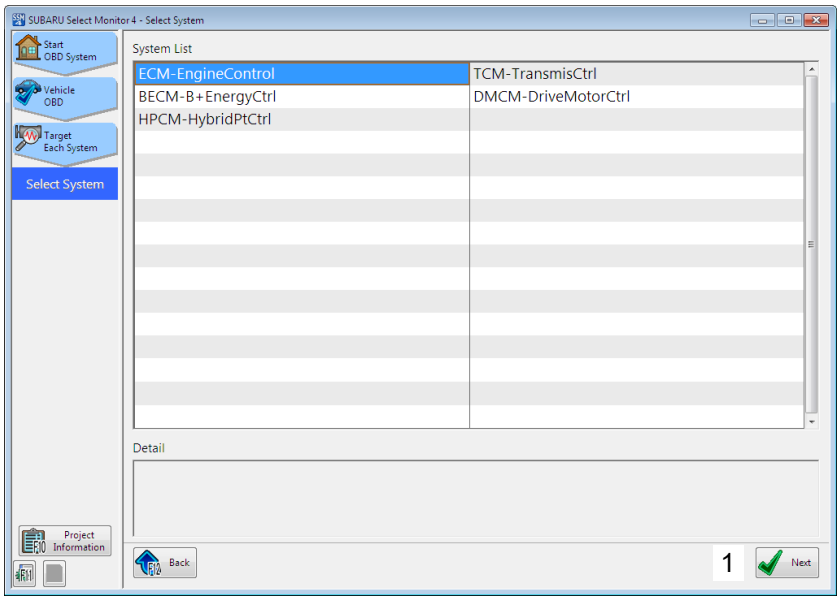
Main menu screen



SMU-00208

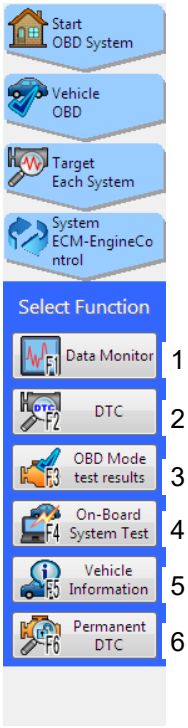
- Click <1> “Each System” on the main menu screen to display the select system screen.

Select system screen



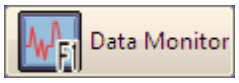
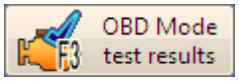
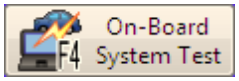
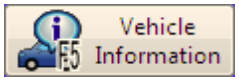
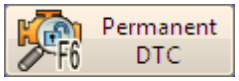
SMU-00209

- From the system list of system selection screen, please select the system to diagnose. When you click the "Next", function selection screen of the relevant system is displayed.



SMU-00210

Operating instructions

1		{Data Monitor} This enables you to display the digital data as well as display data in graphs.
2		{DTC} It displays the diagnosis code stored in the control module. Diagnosis code of Confirmed and Pending is displayed. {Freeze Frame Data} If there is a freeze frame data (FFD), you can check.
3		{OBD Mode test results} From the control module, you can display the self-diagnosis result of specific systems and components.
4		{On-Board System Test} You can implement the functions for controlling the operation of a particular system or component.
5		{Vehicle Information} You can display the vehicle information (VIN,CID,CVN)
6		{Permanent DTC} You can check a permanent diagnosis code stored in the control module. Permanent diagnosis code is stored in the control module when it detects an abnormality. You can not erase the memory clear function. Control module does not detect an anomaly, it will be erased when you normality determination in three driving cycle.

24. Service Manual

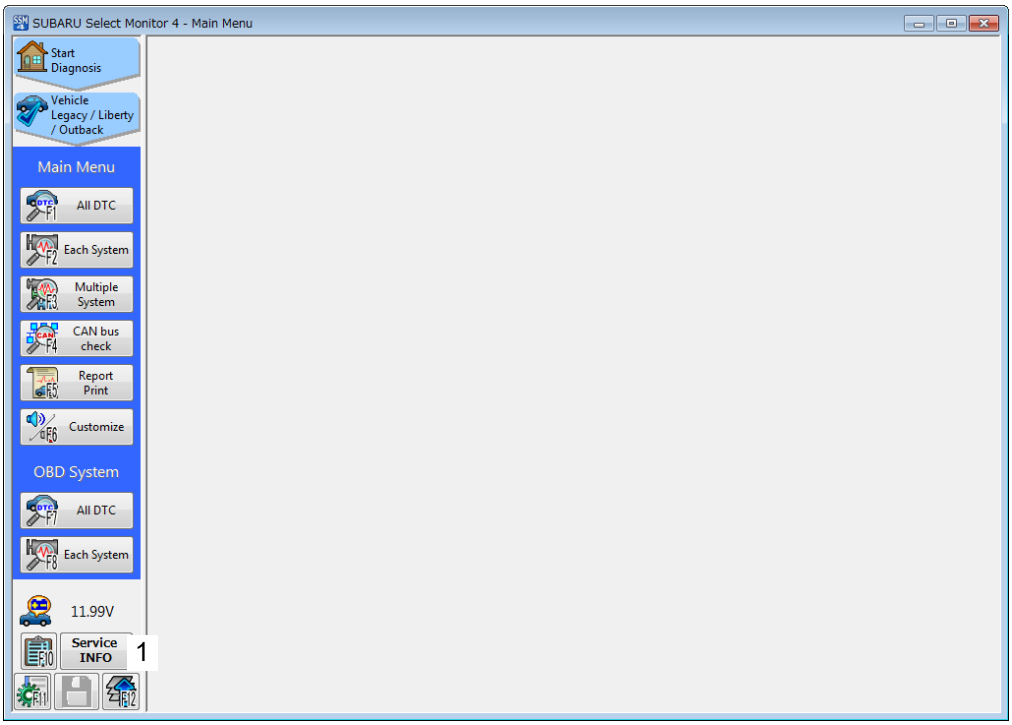
The Service Manual corresponding to the vehicle selected from the vehicle selection screen is automatically searched for from the computer and can be browsed once found.
By using this function, you can effectively reduce the time spent searching for the relevant manual. Also, you can prevent making an incorrect diagnosis by using the wrong manual.

Notes

- To use this function, it is necessary to install the Hybrid-version Service Manual for the target diagnostic vehicle type.
  For how to install the Hybrid-version Service Manual in the computer, refer to the installation manual included with the media. Install the Service Manual after installing the SSM4 and SSMIII PC application software. If the PC application software is not installed, the Service Manual cannot be installed.
- This function can be used on the screens after the vehicle selection screen and each project screen.

- The screens after the vehicle selection screen are displayed. (Here, the Main menu screen is used as an example.)

Main menu screen

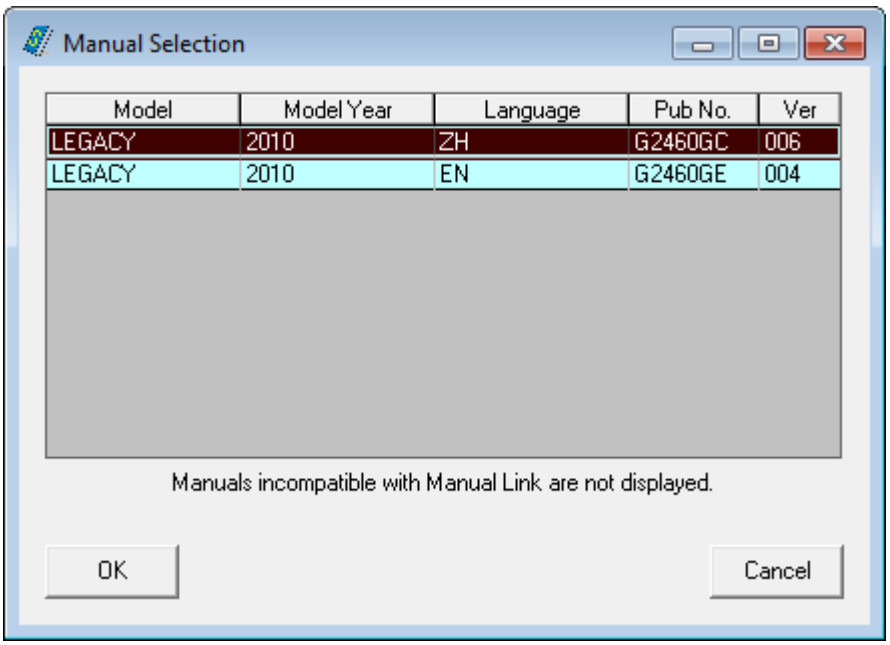


SMU-10060

- Click <1> “Service INFO” on the Main menu screen.

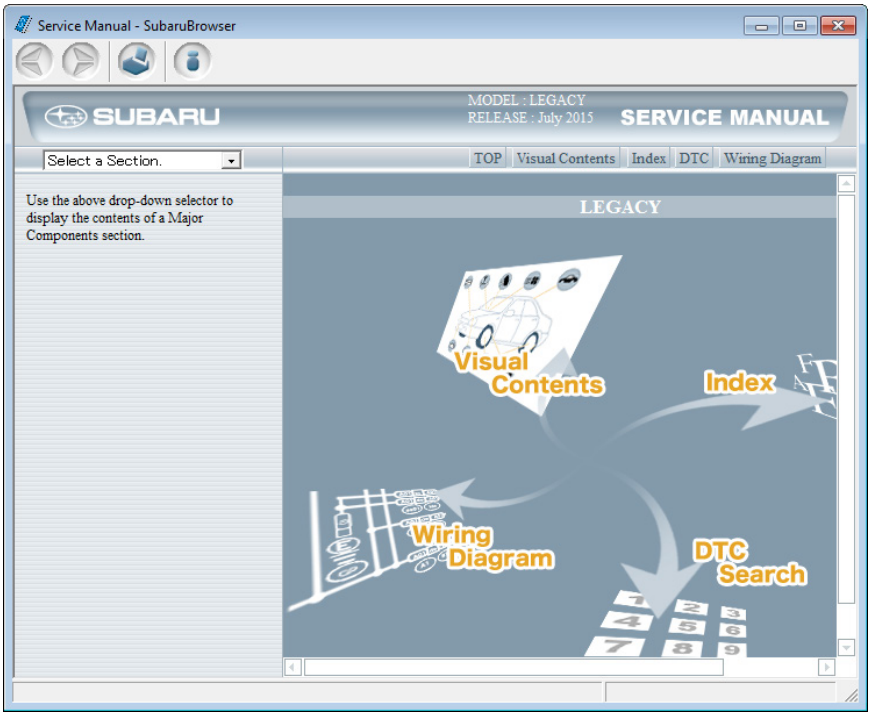
Notes

- If multiple service manuals for the vehicle selected on the vehicle selection screen are installed on the PC or if no manuals are installed on the PC, the vehicle selection screen appears. Select the desired manual and click the “OK” button.



SMU-00884

- The top page of the Service Manual is displayed.



SMU-10061

25. Stand-alone Diagnosis

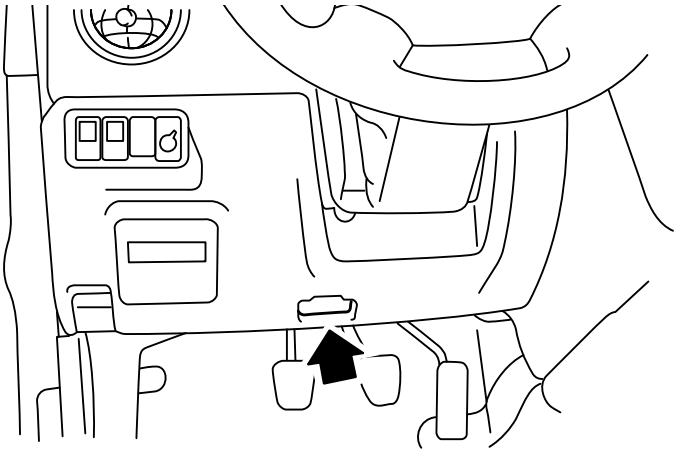
The DST-i can be used for fault diagnosis in a stand-alone configuration without connecting to a PC.
You need to insert a SD memory card with the software installed on it into the card slot of the DST-i in order to perform stand-alone diagnosis.

Notes

- Be sure to turn off DST-i power before installing a SD memory card into or removing a SD memory card from its card slot. Inserting or removing a SD memory card while DST-i power is turned on runs the risk of damaging the internal data of SD memory card.
- You can carry out this function only when interface box to use is DST-i.

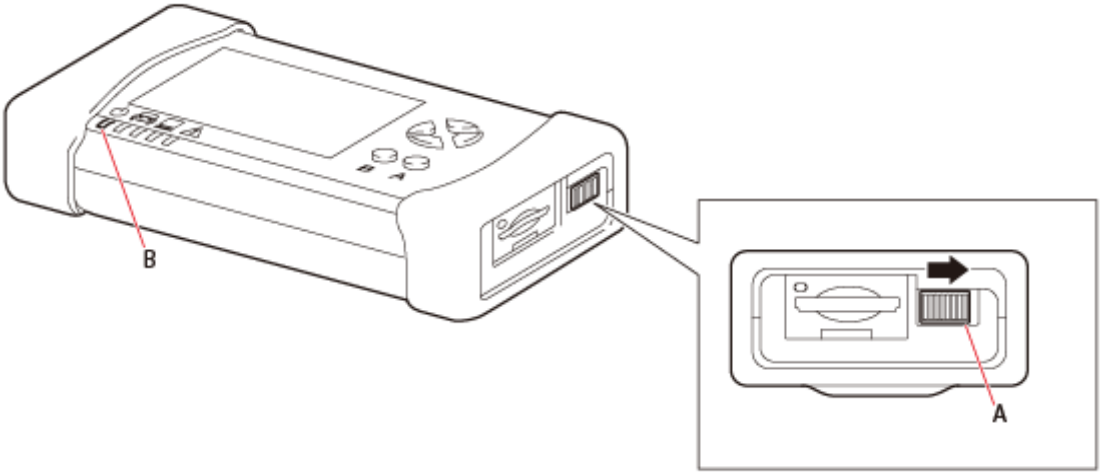
25-1. Getting Ready (Starting Up the DST-i in Stand-alone Mode)

- Insert a SD memory card that has the software installed into the card slot of the DST-i.
- Use the datalink cable to connect the DST-i to the datalink connector of the vehicle.



SMU-00113

- Turn the mode switch of DST-i on, and confirm the [Power] indicator lights up in green.



SMU-01379

A: Mode switch

B: Power indicator

- After the Opening screen was displayed, press any key.

SMU-01380

Notes

- Depending on setting, a driving recorder mode may be started. In that case, you select "STScreen" with the left key or the right key and push the A key.

- This displays the Main Menu screen.

SMU-01381

25-2. All System Diagnosis

Selecting this item displays the fault detect status of all control system control modules for which SSM4 diagnosis is supported, and memorized DTCs.
When a particular control system cannot be identified as the causes of a vehicle's problem, perform this diagnosis and use the displayed DTCs to perform diagnosis.

Notes
- For a vehicle equipped with a cruise control system, turn on the cruise control switch before performing inspection.
- This inspection mode may not function in the case of certain vehicle models and vehicle specifications.

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

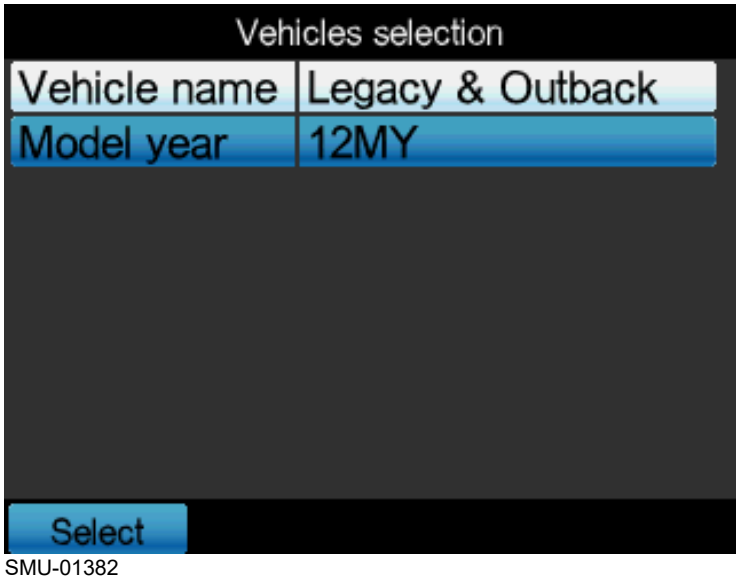
SMU-01381

- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

Notes
- Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
  Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.

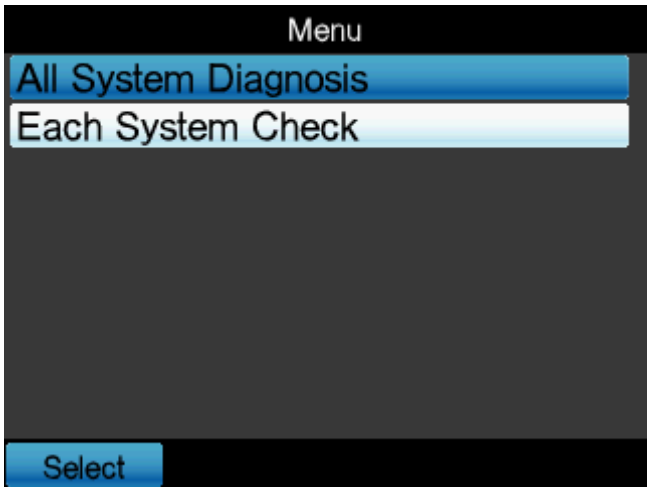


SMU-01382

- This displays the Inspection Menu screen.

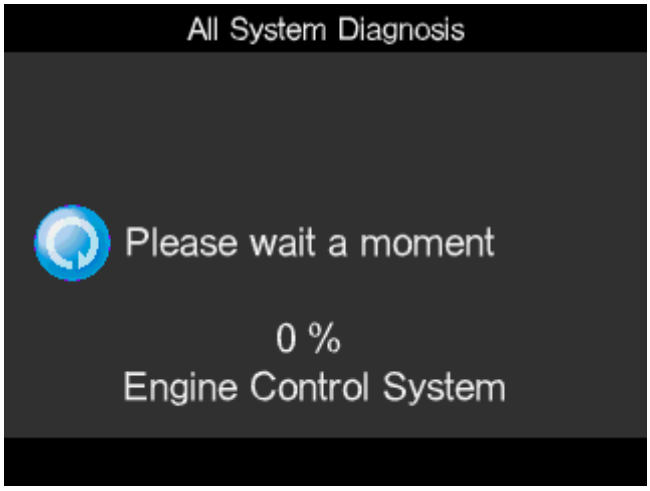
  Use [UP] and [DOWN] keys to select [All System Diagnosis], and then press [A] key.

  Press [B] key to return to the Vehicle Select screen.



SMU-01383

- This displays the All DTC Reading screen.



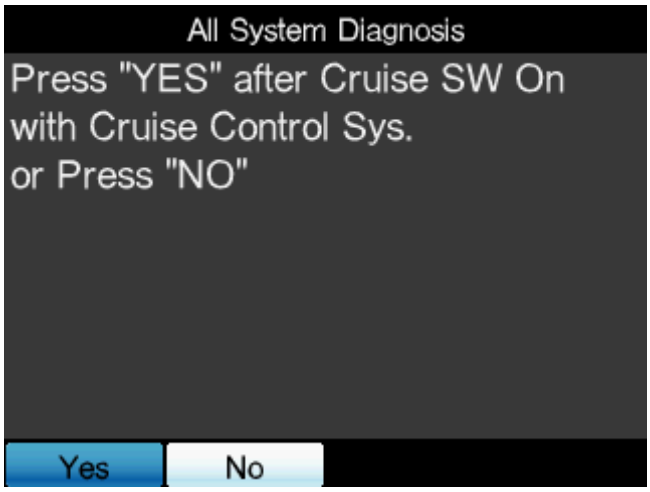
SMU-01384

- The screen shown below may be displayed.

  For a vehicle equipped with a cruise control system, turn on the cruise control main switch and then use [LEFT] and [RIGHT] keys to select [Yes] of the button display area, and press [A] key. For a vehicle that does not have cruise control, select [No], and then press [A] key.

Notes

- This screen may not be displayed in the case of certain vehicle specifications.



SMU-01385

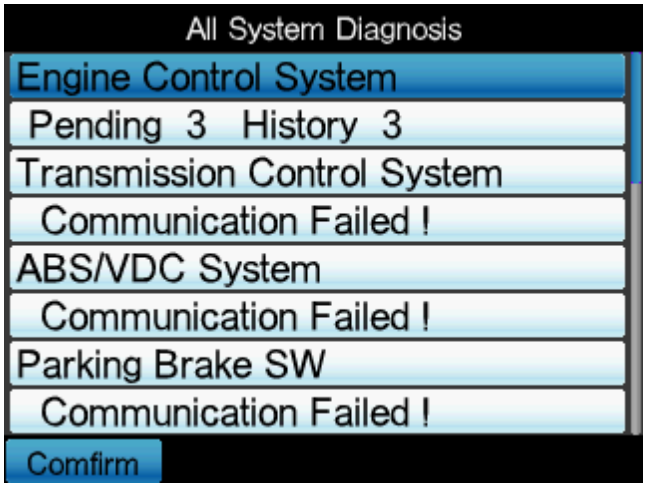
- This displays the All DTC Display screen.

  Use [UP] and [DOWN] keys to select any system, and press [A] key.

  Press [B] key to return to the Inspection Menu screen.

Notes

- The display shows the DTCs that are remembered by each control module.



SMU-01386

- This displays the System Distinction DTC Display screen.

  Press [B] key to return to the All DTC Display screen.

Notes

- The current system name is displayed in the upper left portion of the screen.
- Use [LEFT] and [RIGHT] keys to select [Memorized] of the button display area, and press [A] key to change DTC displayed in the screen.
- The displayed DTC and the button name of the button display area such as [Temporary] or [Memorized] may be different in the case of vehicle and system.

SMU-01387

25-3. Data Display

This system allows sampling of control module input/output data of control systems for which SSM4 diagnosis is supported, and sampling of control data.

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

SMU-01381

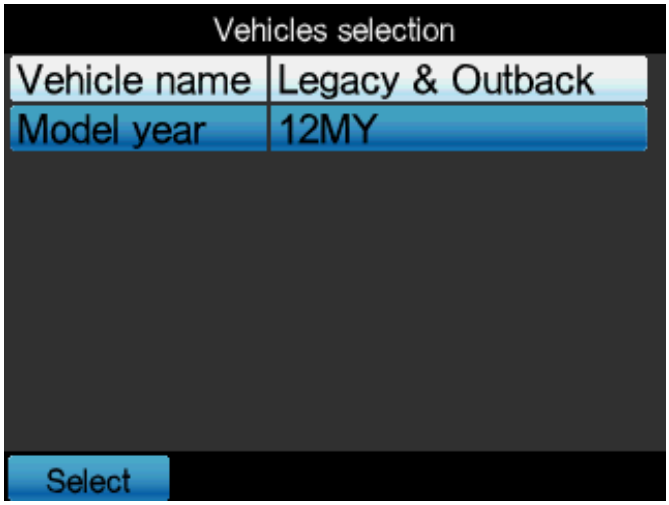
- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

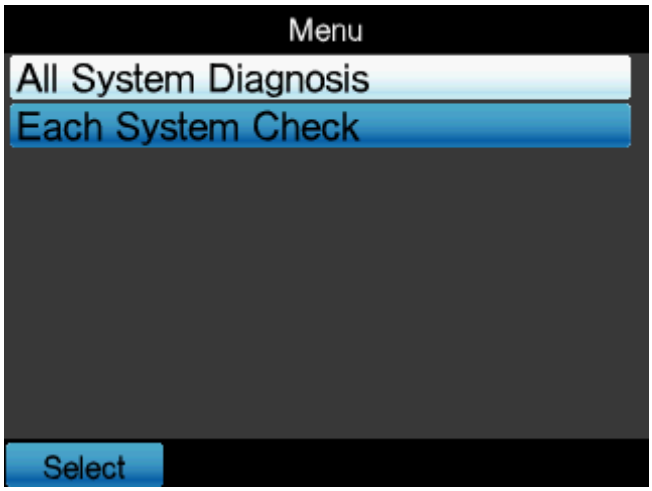
Notes

- Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
- Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.



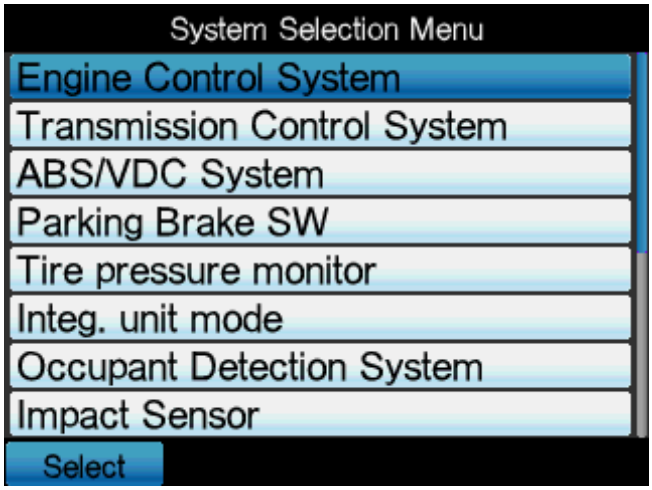
SMU-01382

- This displays the Inspection Menu screen.
  Use [UP] and [DOWN] keys to select [Each System Check], and then press [A] key.
  Press [B] key to return to the Vehicle Select screen.



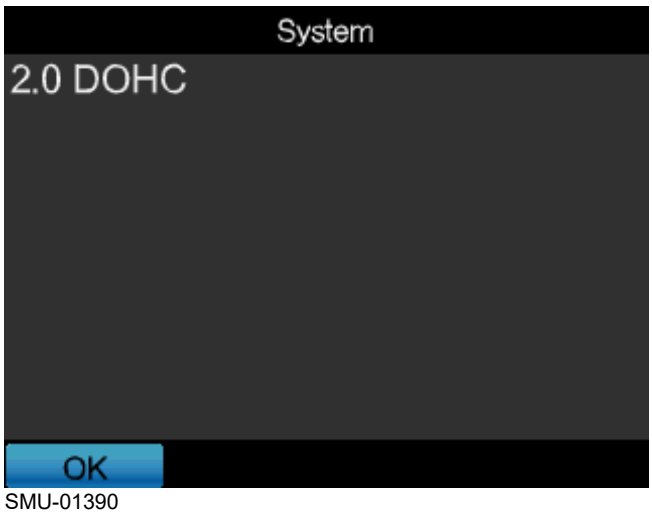
SMU-01388

- This displays the System Select screen.
  Use [UP] and [DOWN] keys to select [Engine Control System], and then press [A] key. "For this example, [Engine Control System] is selected."
  Press [B] key to return to the Inspection Menu screen.



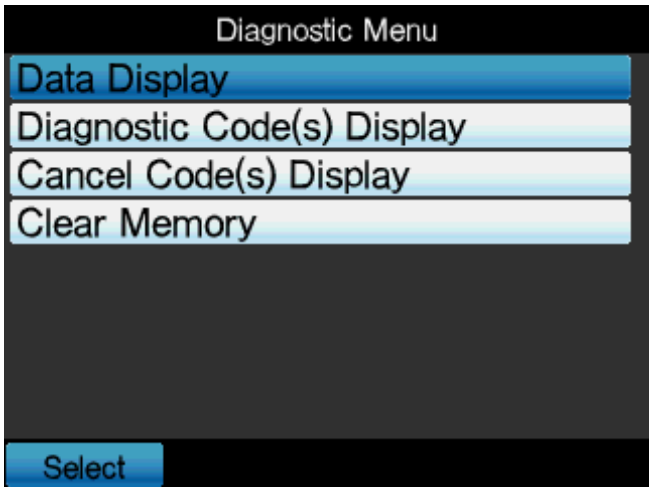
SMU-01389

- This displays the System Information Display screen for the system being diagnosed. Press [A] key.



SMU-01390

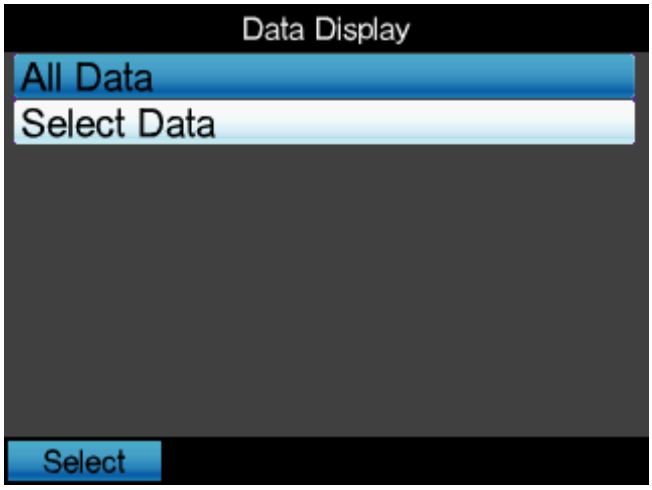
- This displays the Diagnostic Menu screen.
  Use [UP] and [DOWN] keys to select [Data Display], and then press [A] key.
  Press [B] key to return to the System Select screen.



SMU-01391

- This displays the Data Display Items Select screen (Select method).
  Use [UP] and [DOWN] keys to select [All Data] or [Select Data], and then press [A] key.
  Press [B] key to return to the Diagnostic Menu screen.

Notes
- All the sampled items are displayed in the selected status in [All Data], and the sampled items are displayed in the not-selected status in [Select Data].



SMU-01392

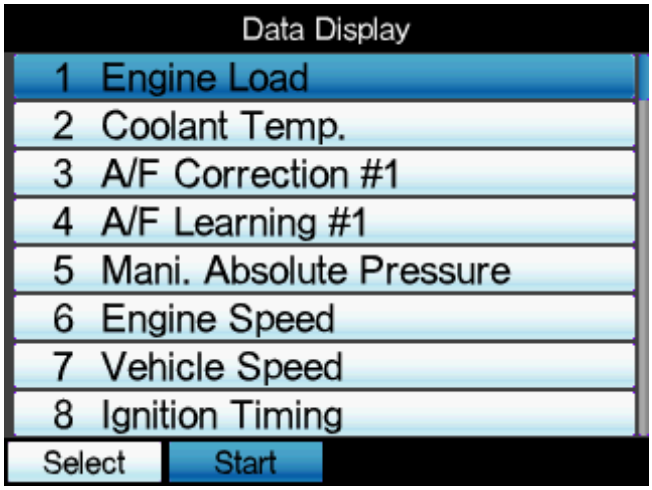
- This displays the Data Display Items Select screen (Sampled items).

  Use [LEFT] and [RIGHT] keys to select [Start] of the button display area, and press [A] key.

  Press [B] key to return to the Data Display Items Select screen (Select method).

Notes

- The alignment sequence in the screen is displayed in the left side of the sampled item.



SMU-01393

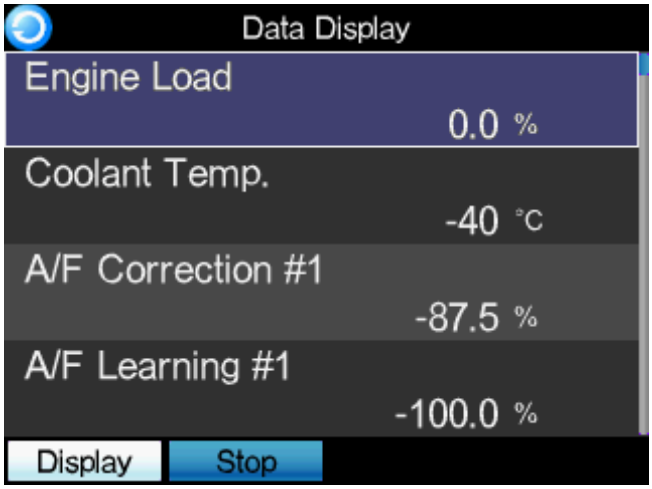
- This displays the Current Data Display screen.

  Use [LEFT] and [RIGHT] keys to select [Stop] of the button display area, and press [A] key.

  Press [B] key to return to the Data Display Items Select screen (Sampled items).

Notes

- Use [LEFT] and [Right] keys to select [Display] of the button display area, and press [A] key to change the number of sampled items shown in the screen to eight items.

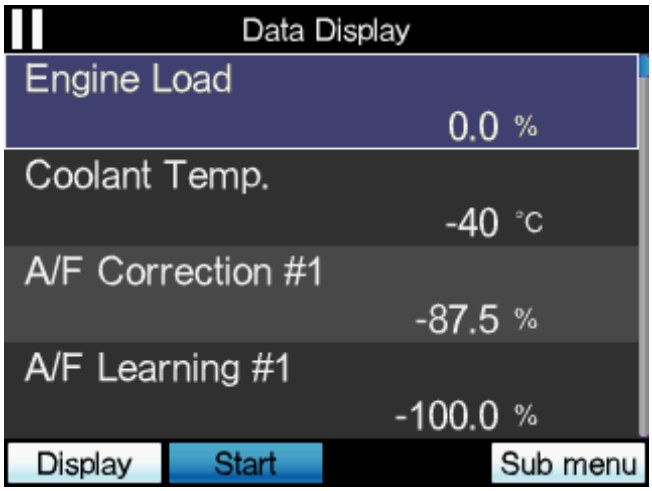


SMU-01394

- This displays the Measurement Stop screen.

  Use [LEFT] and [RIGHT] keys to select [Start] of the button display area, and press [A] key to restart easurement.

  Press [B] key to return to the Data Display Items elect screen (Sampled items).



SMU-01395

25-4. Diagnostic Code(s) Display

This type of inspection allows selection of a system from among the control systems for which SSM4 diagnosis is supported. Then memorized information such as DTCs can be viewed on the DST-I screen.

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

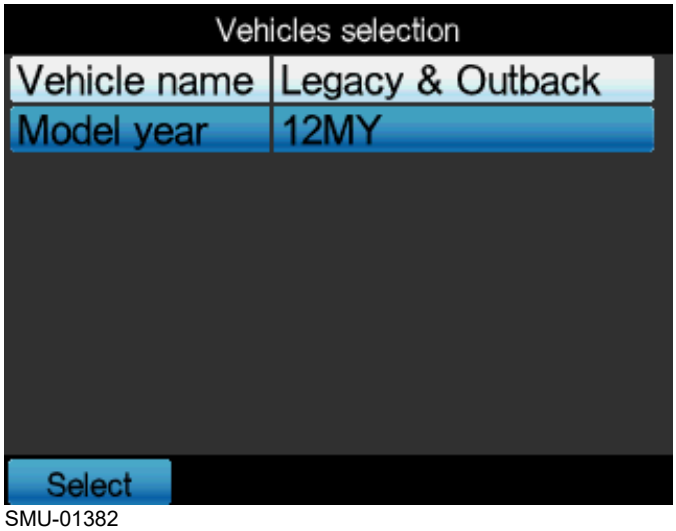
SMU-01381

- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

Notes
- Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
  Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.

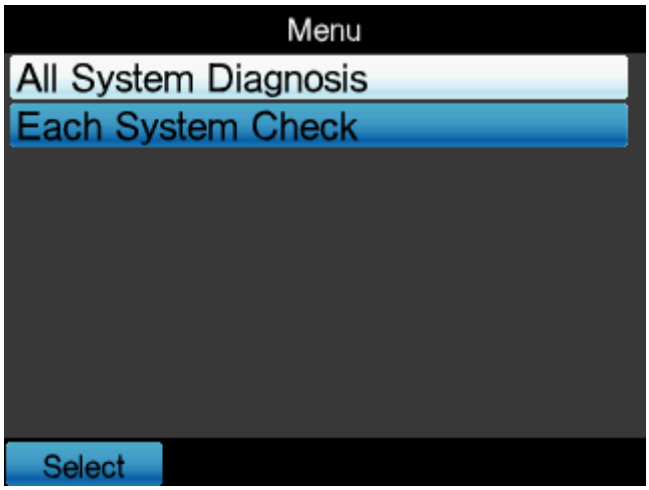


SMU-01382

- This displays the Inspection Menu screen.

  Use [UP] and [DOWN] keys to select [Each System Check], and then press [A] key.

  Press [B] key to return to the Vehicle Select screen.

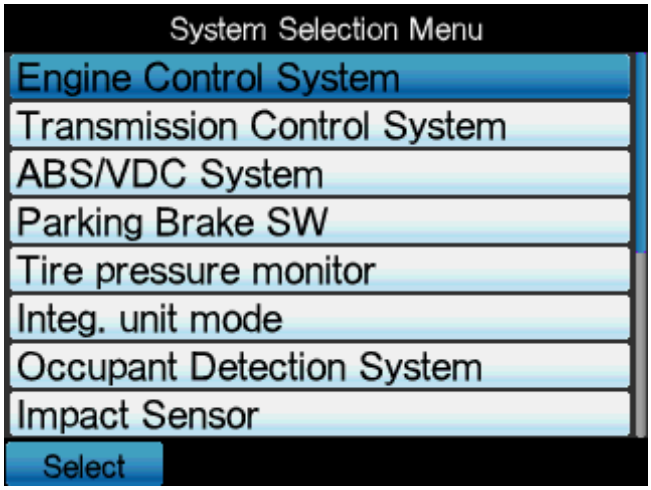


SMU-01388

- This displays the System Select screen.

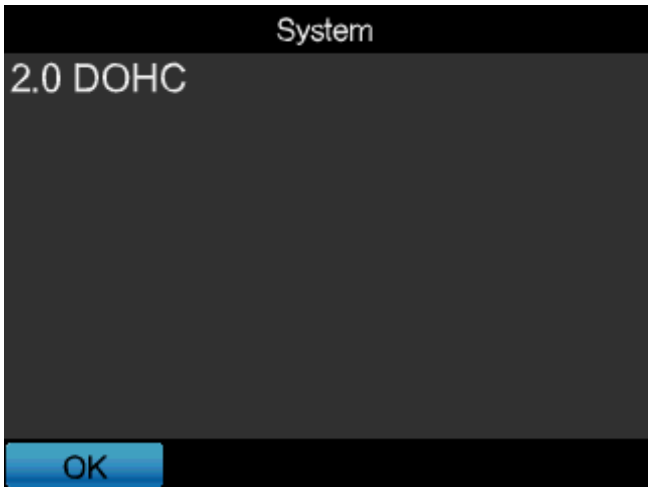
  Use [UP] and [DOWN] keys to select [Engine Control System], and then press [A] key. "For this example, [Engine Control System] is selected."

  Press [B] key to return to the Inspection Menu screen.



SMU-01389

- This displays the System Information Display screen for the system being diagnosed. Press [A] key.

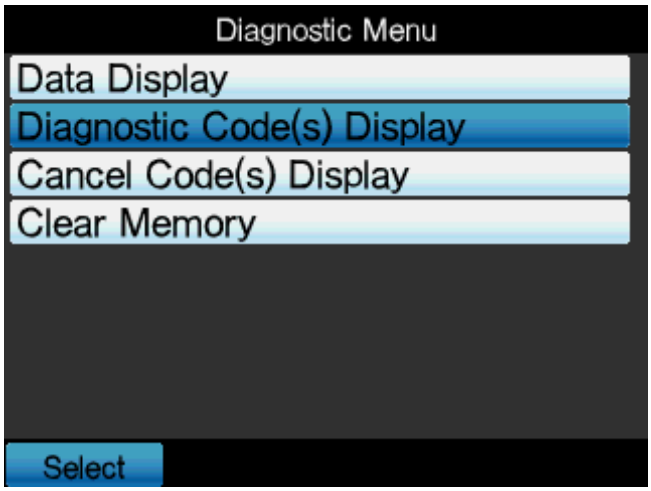


SMU-01390

- This displays the Diagnostic Menu screen.

  Use [UP] and [DOWN] keys to select [Diagnostic Code(s) Display], and then press [A] key.

  Press [B] key to return to the System Select screen.



SMU-01396

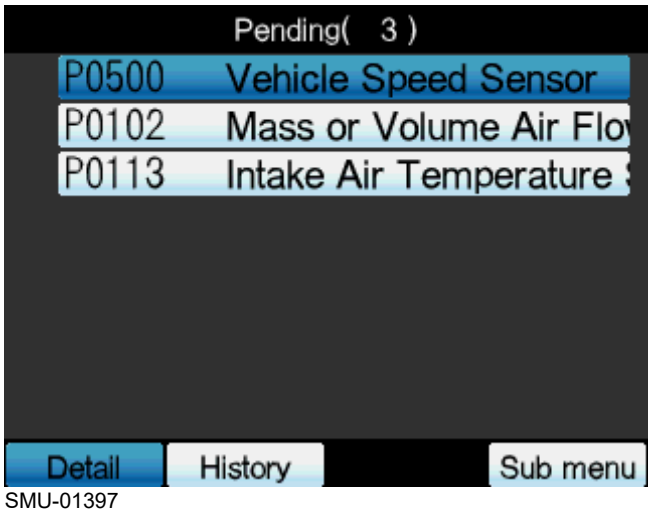
- This displays the DTC Display screen.

  Use [UP] and [DOWN] keys to select any code. Use [LEFT] and [RIGHT] keys to select [Details] of the button display area, and press [A] key.

  Press [B] key to return to the Diagnostic Menu screen.

Notes

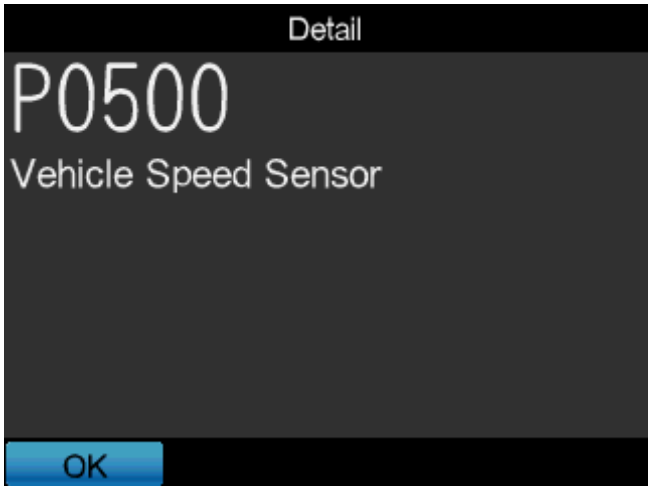
- Use [LEFT] and [RIGHT] keys to select [Memorized] of the button display area, and press [A] key to change DTC displayed in the screen.
  The displayed DTC and the button name of the button display area such as [Temporary] or [Memorized] may be different in the case of vehicle and system.



SMU-01397

- This displays the DTC Details Display screen.

  Press [A] key or [B] key to return to the DTC Display screen.



SMU-01398

25-5. Work Support

Important

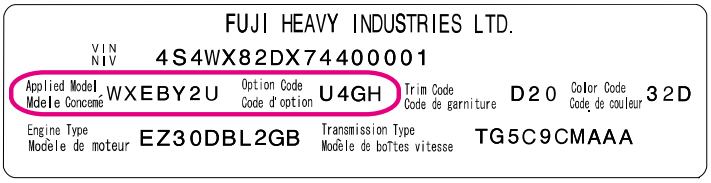
- If you turn off the mode switch of DST-i or disconnect the datalink cable while the actuator is operating under the work support, the actuator may be left operated. Make sure to exit the work support before execution of the terminating operation.

25-5-1. Selection of Parameter

This function is used to select/register parameters when the VDC control module has been replaced with a normal spare part.

Notes

- Always execute "Clear Memory" after operating this function.
- This function cannot be used with a control module that is not a normal spare part.
- To confirm the applied model, refer to the "model No. plate" affixed to the vehicle. The location of the model No. plate is shown in the service manual.



SMU-01192

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

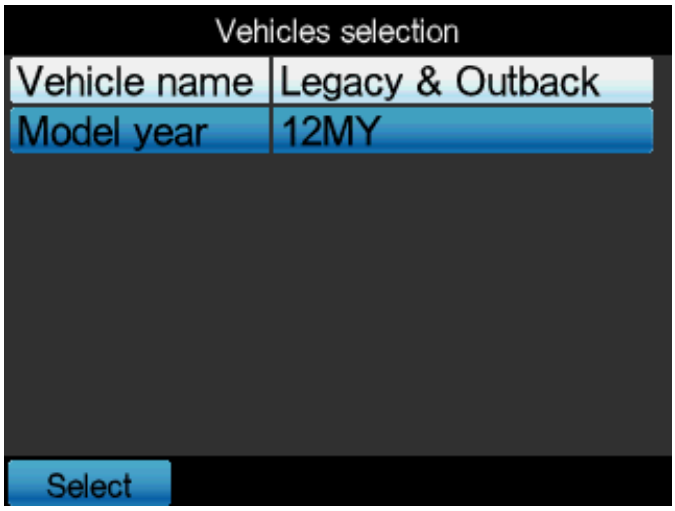
SMU-01381

- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

  Notes
  - Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
    Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.

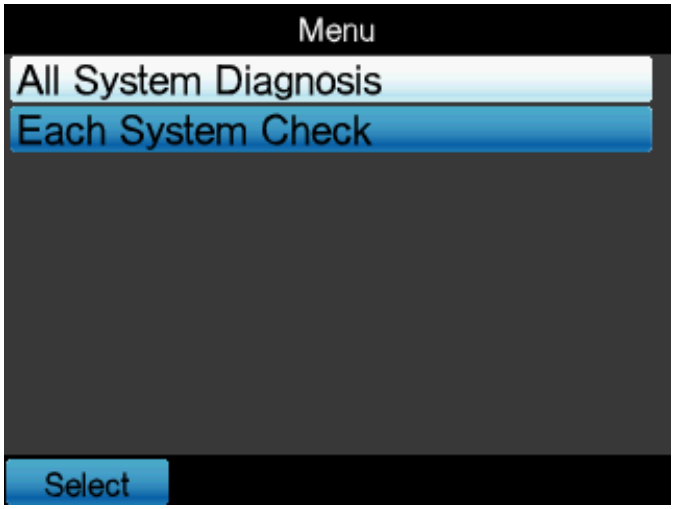


SMU-01382

- This displays the Inspection Menu screen.

  Use [UP] and [DOWN] keys to select [Each System Check], and then press [A] key.

  Press [B] key to return to the Vehicle Select screen.

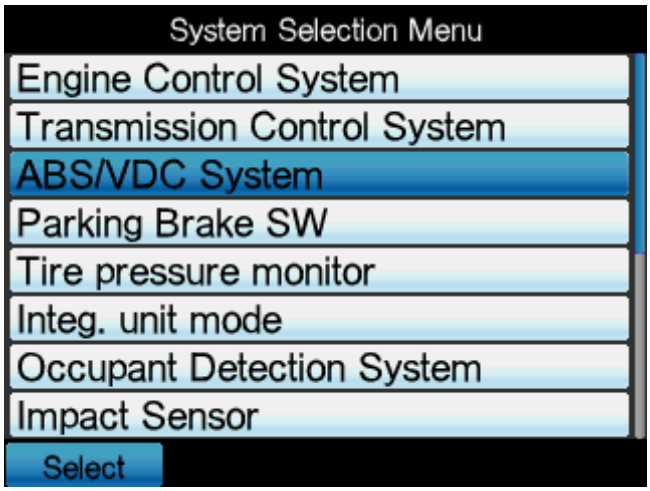


SMU-01388

- This displays the System Select screen.

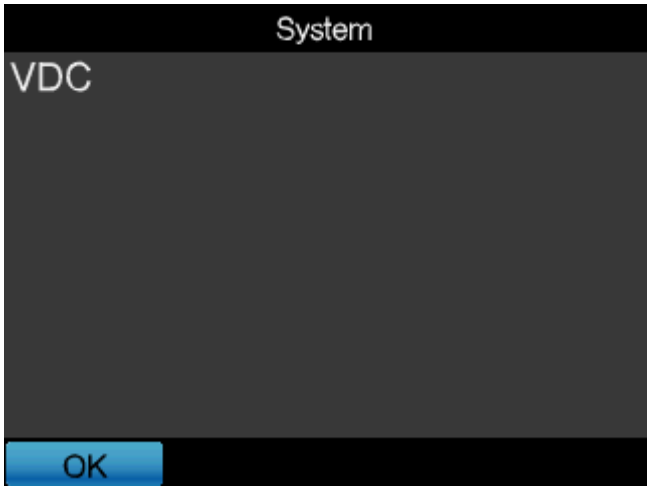
  Use [UP] and [DOWN] keys to select [ABS/VDC System], and then press [A] key.

  Press [B] key to return to the Inspection Menu screen.



SMU-01402

- This displays the System Information Display screen for the system being diagnosed. Press [A] key.

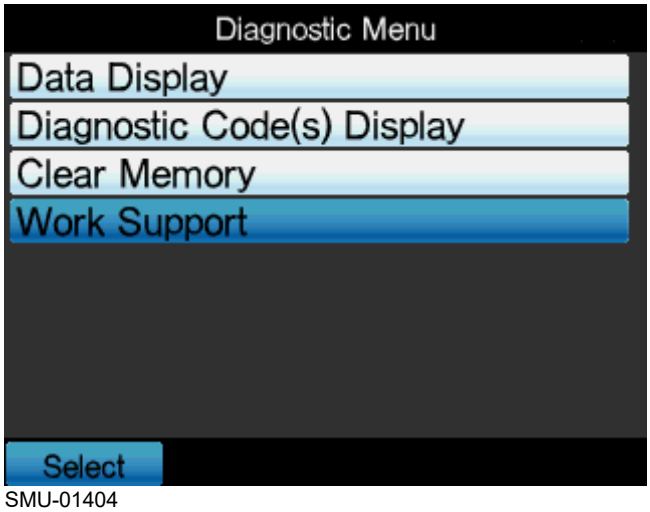


SMU-01403

- This displays the Diagnostic Menu screen.

  Use [UP] and [DOWN] keys to select [Work Support], and then press [A] key.

  Press [B] key to return to the System Select screen.

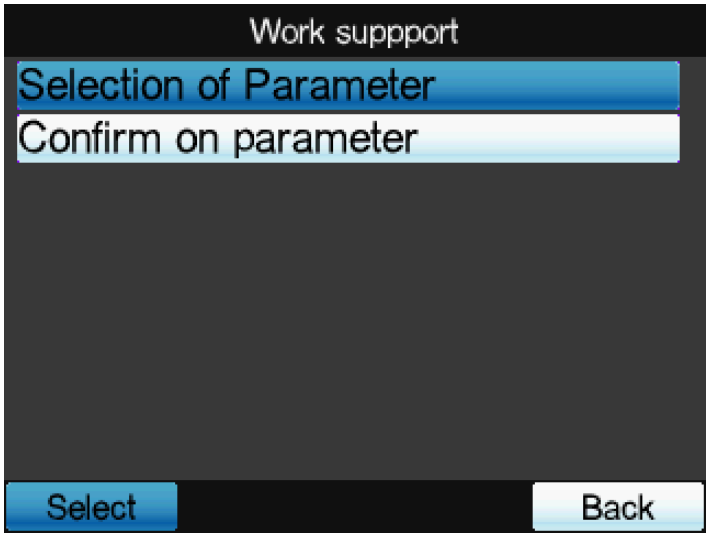


SMU-01404

- This displays the Work Support Menu screen.

  Use [UP] and [DOWN] keys to select [Selection of Parameter]. Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and press [A] key.

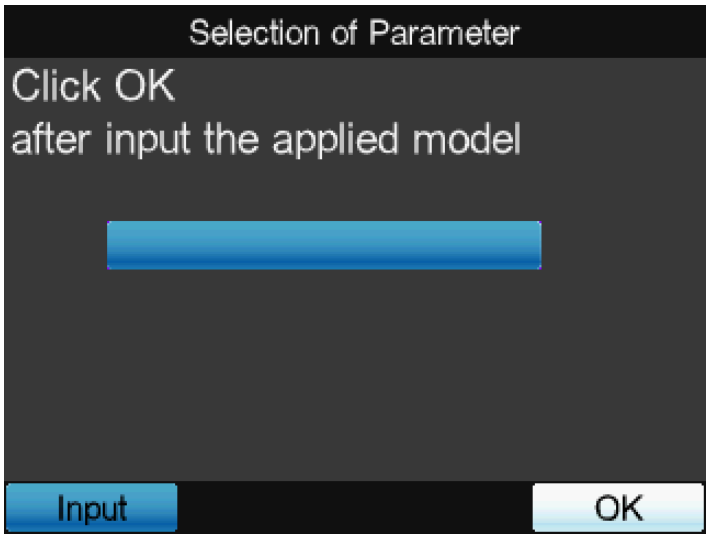
  Press [B] key to return to the Diagnostic Menu screen.



SMU-01405

- This displays the Applied Model Confirmation screen.

  Use [LEFT] and [RIGHT] keys to select [Input] of the button display area, and press [A] key.



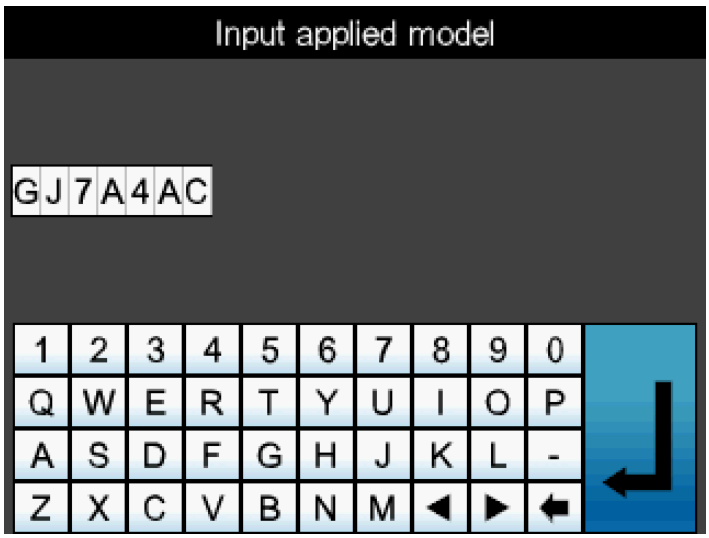
SMU-01406

- This displays the Applied Model Input screen.

  Use [UP], [DOWN], [LEFT] or [RIGHT] key to select a letter string, and press [A] key to input an applied model.

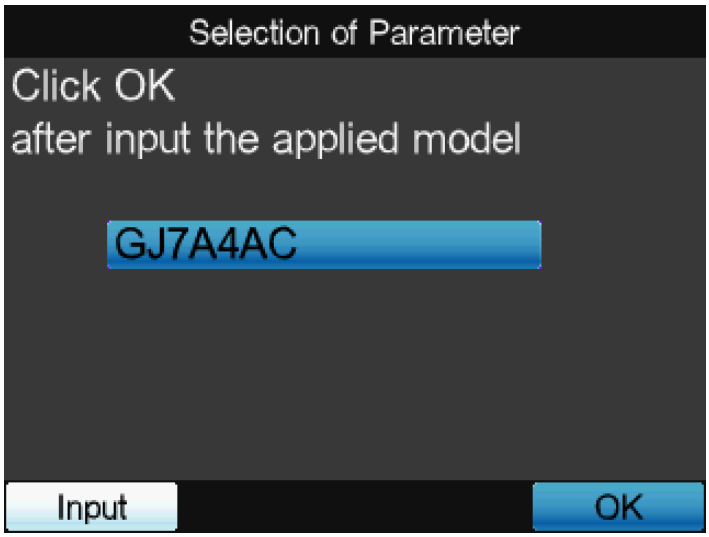
  After completion of applied model input, select the [Enter] button and press [A] key.

  Notes
  - Press [B] key during input to delete one letter in front of the cursor.
    Select the triangle button at the bottom, and press [A] key to move the cursor.



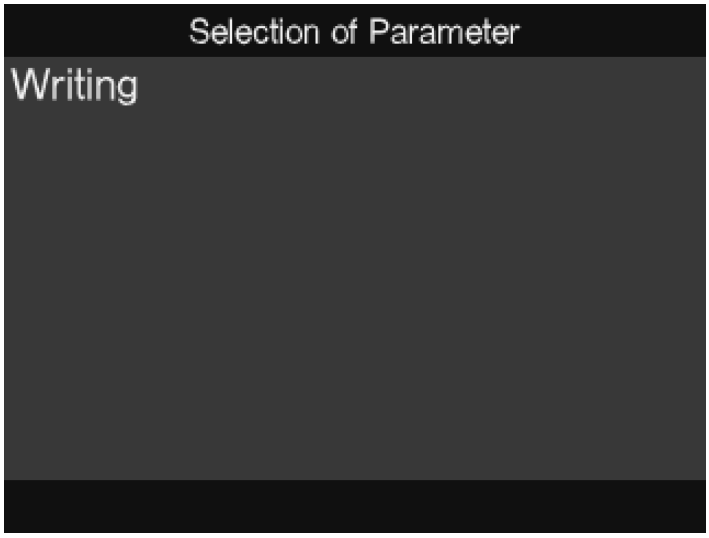
SMU-01407

- After completion of input, use [LEFT] or [RIGHT] key to select [OK] of the button display area of the Applied Model Confirmation screen, and then press [A] key.



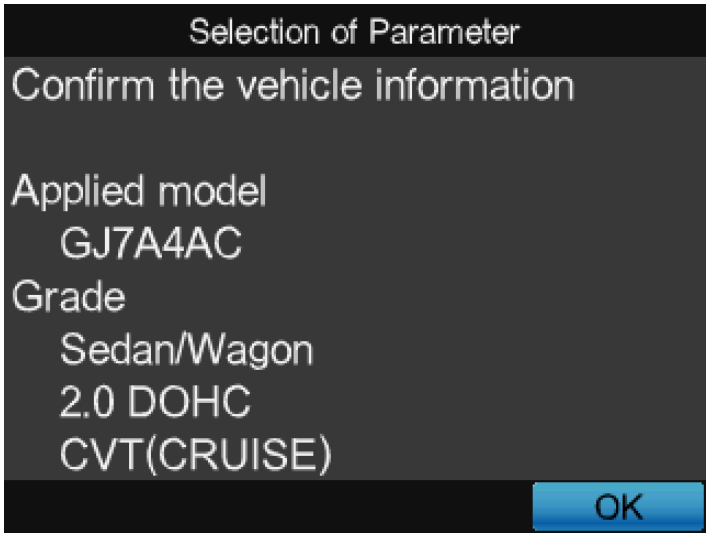
SMU-01408

- The Parameter Writing screen will be displayed. Wait without any operation.



SMU-01409

- This displays the Vehicle Information Confirmation screen.
  Make sure that applied model and grade shown on the screen are correct.
  Press [A] key to return to the Work Support Menu screen.



SMU-01410

25-5-2. Confirm on Parameter

This function allows you to confirm the parameters registered in the VDC control module.

Notes
- This function can be used even if the VDC control module is not a normal spare part.

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

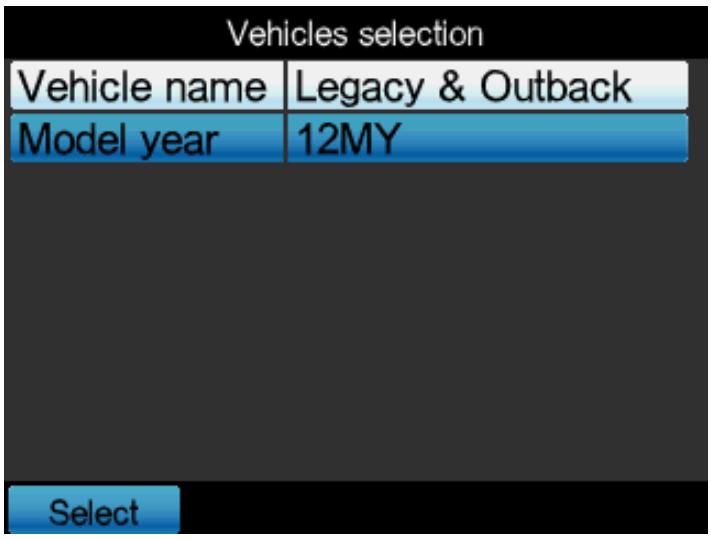
SMU-01381

- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

Notes
- Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
  Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.

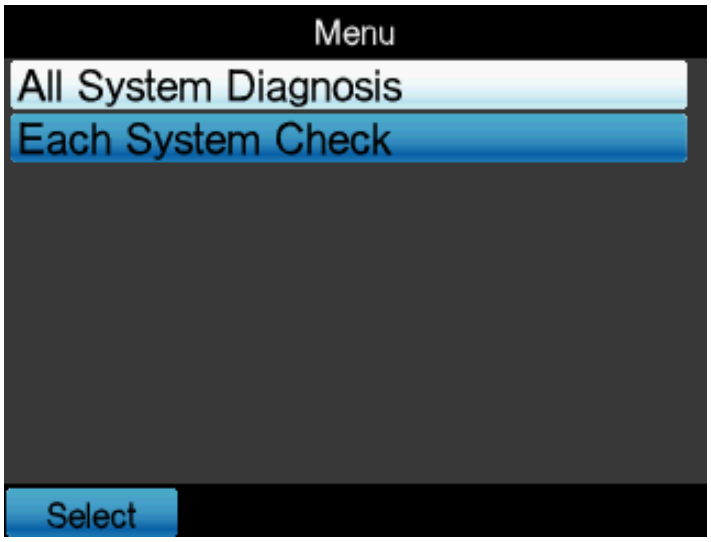


SMU-01382

- This displays the Inspection Menu screen.

  Use [UP] and [DOWN] keys to select [Each System Check], and then press [A] key.

  Press [B] key to return to the Vehicle Select screen.

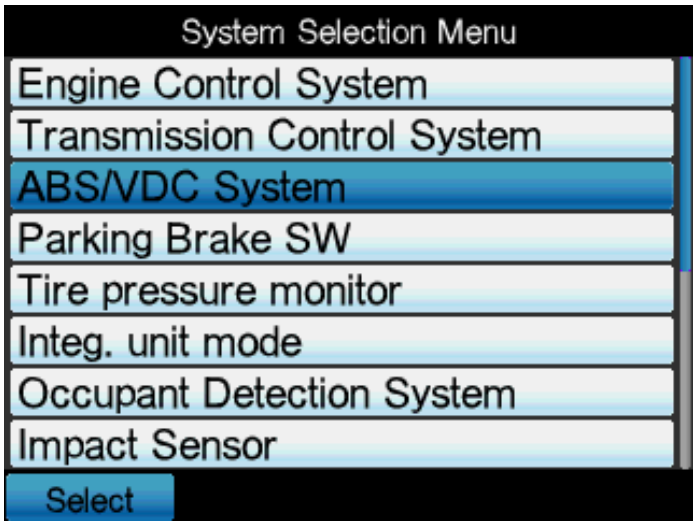


SMU-01388

- This displays the System Select screen.

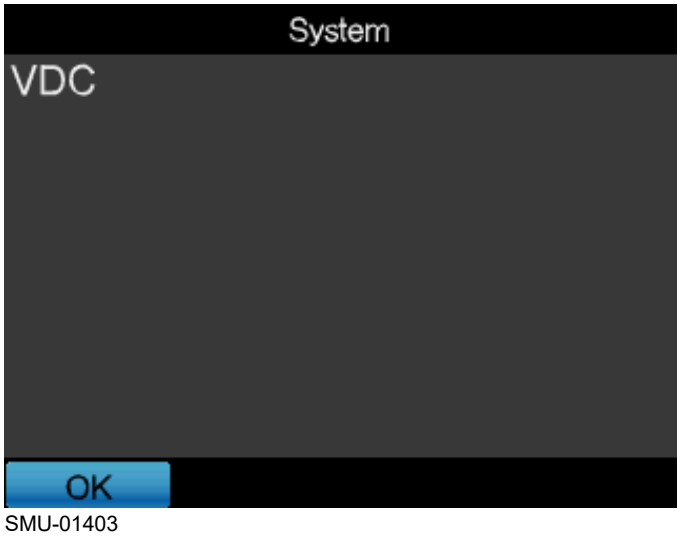
  Use [UP] and [DOWN] keys to select [ABS/VDC System], and then press [A] key.

  Press [B] key to return to the Inspection Menu screen.



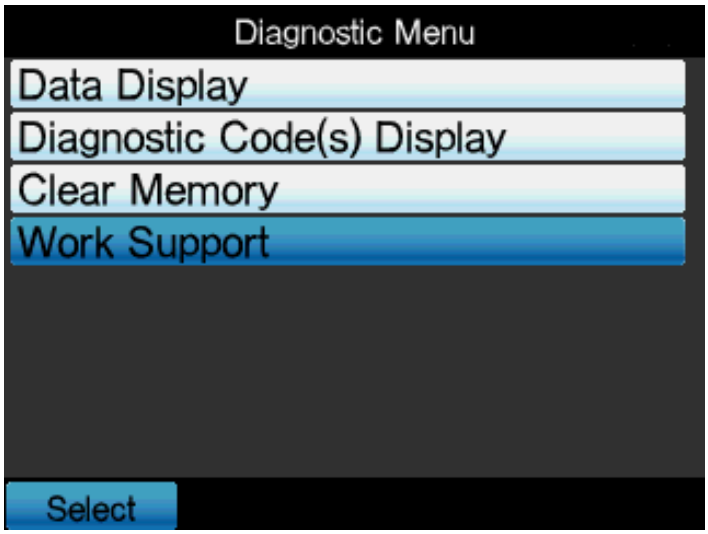
SMU-01402

- This displays the System Information Display screen for the system being diagnosed. Press [A] key.



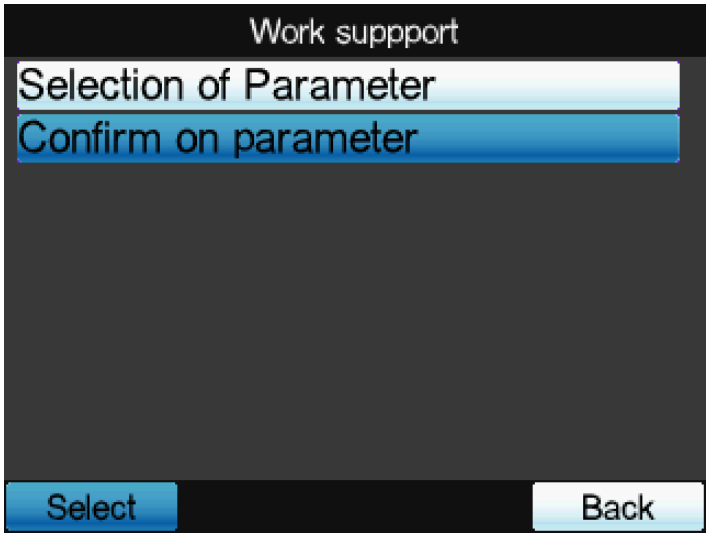
SMU-01403

- This displays the Diagnostic Menu screen.
  Use [UP] and [DOWN] keys to select [Work Support], and then press [A] key.
  Press [B] key to return to the System Select screen.



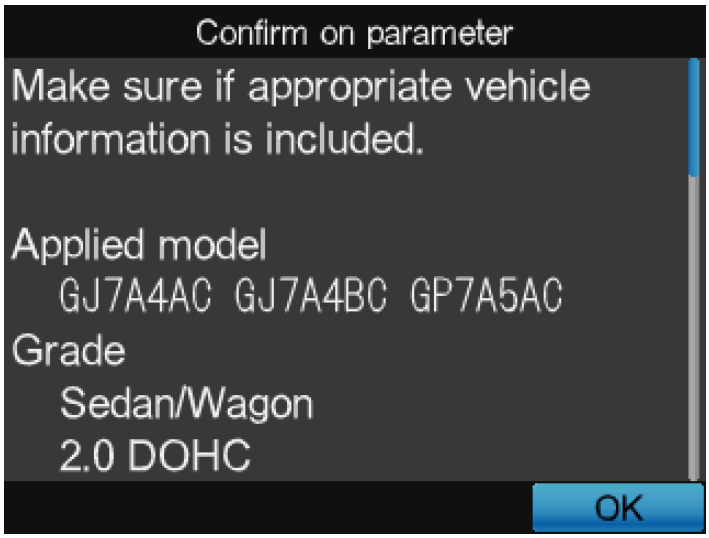
SMU-01404

- This displays the Work Support Menu screen.
  Use [UP] and [DOWN] keys to select [Confirm on parameter]. Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and press [A] key.
  Press [B] key to return to the Diagnostic Menu screen.



SMU-01411

- This displays the Parameter Confirmation screen.
  Make sure that applied model and grade shown on the screen are correct.
  Press [A] key to return to the Work Support Menu screen.



SMU-01412

25-5-3. Impact Sensor

Impact Sensor sensitivity adjustment on the security system can be done by this function.
It is necessary to refer to service manuals when you do this adjustment.

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

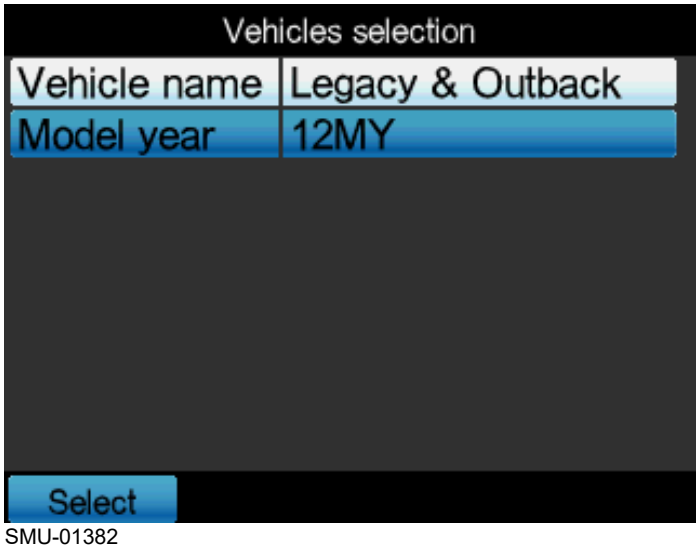
SMU-01381

- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

  Notes
  - Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
    Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.

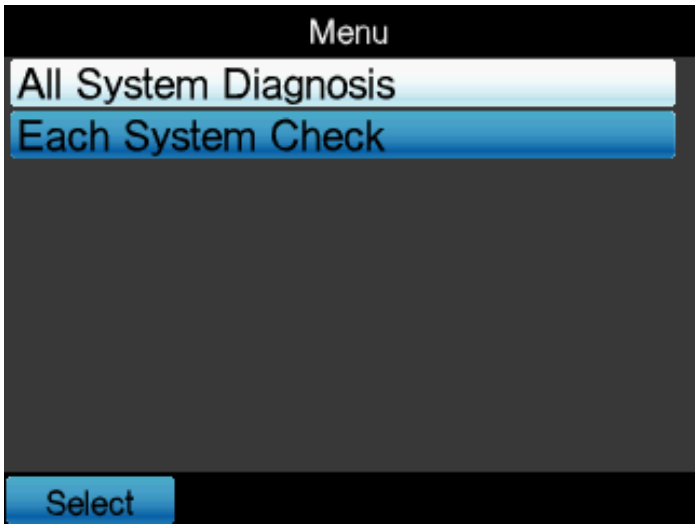


SMU-01382

- This displays the Inspection Menu screen.

  Use [UP] and [DOWN] keys to select [Each System Check], and then press [A] key.

  Press [B] key to return to the Vehicle Select screen.

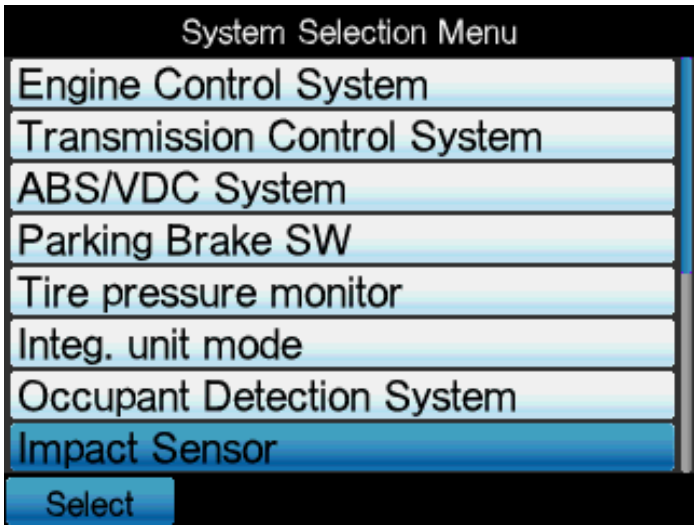


SMU-01388

- This displays the System Select screen.

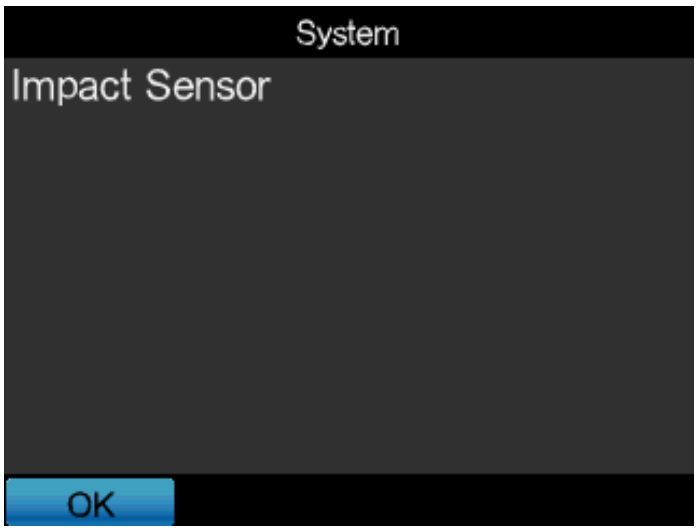
  Use [UP] and [DOWN] keys to select [Impact Sensor], and then press [A] key.

  Press [B] key to return to the Inspection Menu screen.



SMU-01413

- This displays the System Information Display screen for the system being diagnosed. Press [A] key.

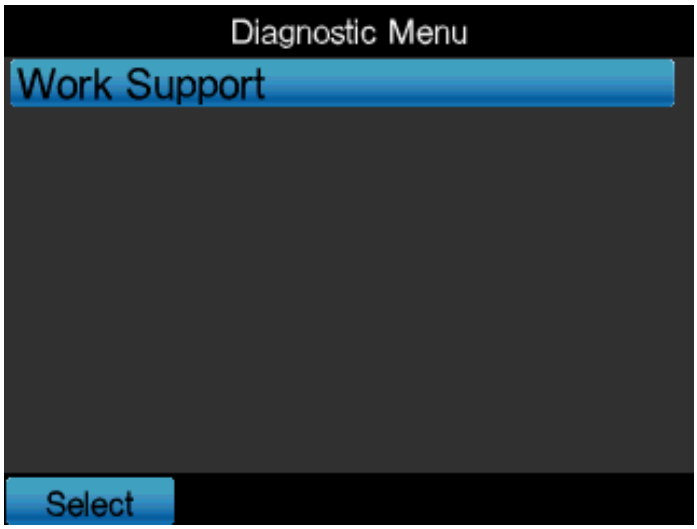


SMU-01414

- This displays the Diagnostic Menu screen.

  Use [UP] and [DOWN] keys to select [Work Support], and then press [A] key.

  Press [B] key to return to the System Select screen.

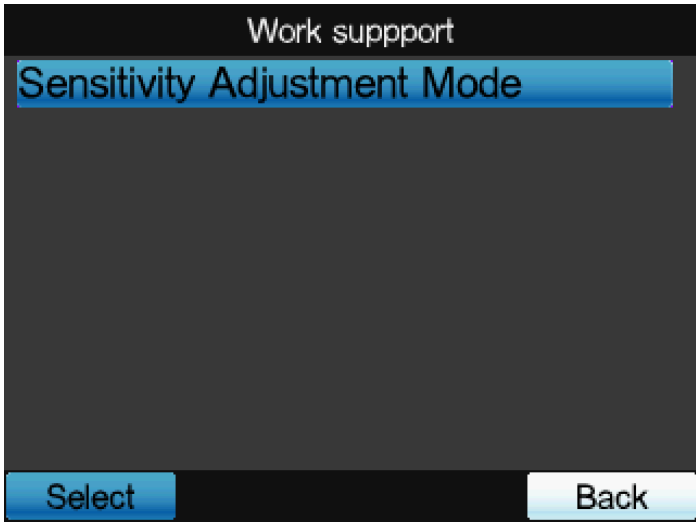


SMU-01415

- This displays the Work Support Menu screen.

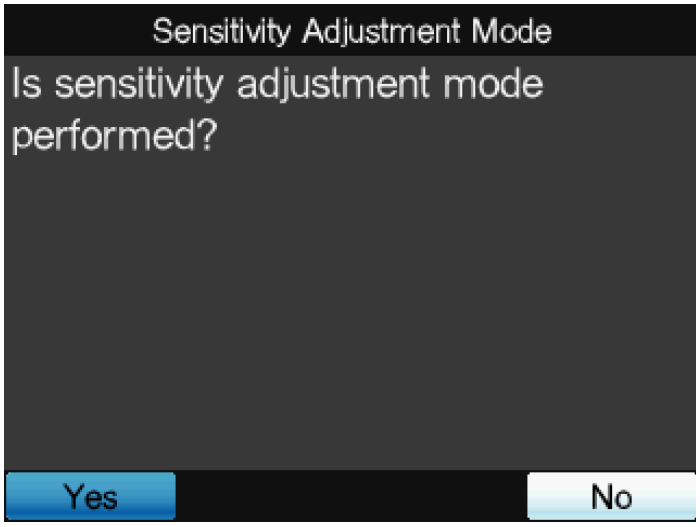
  Use [UP] and [DOWN] keys to select [Sensitivity Adjustment Mode]. Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and press [A] key.

  Press [B] key to return to the Diagnostic Menu screen.



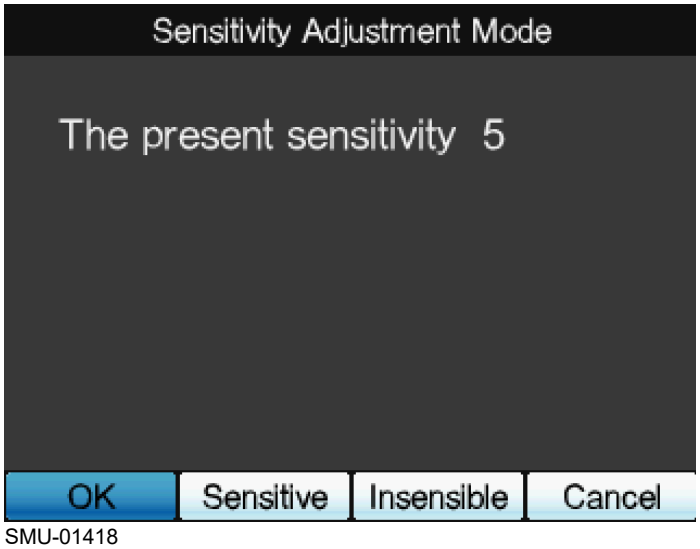
SMU-01416

- This displays the Sensitivity Adjustment Mode Confirmation screen.
  Use [LEFT] and [RIGHT] keys to select [Yes] of the button display area, and press [A] key.
  If you do not execute the sensitivity adjustment mode, select [No] and press [A] key to return to the Work Support Menu screen.



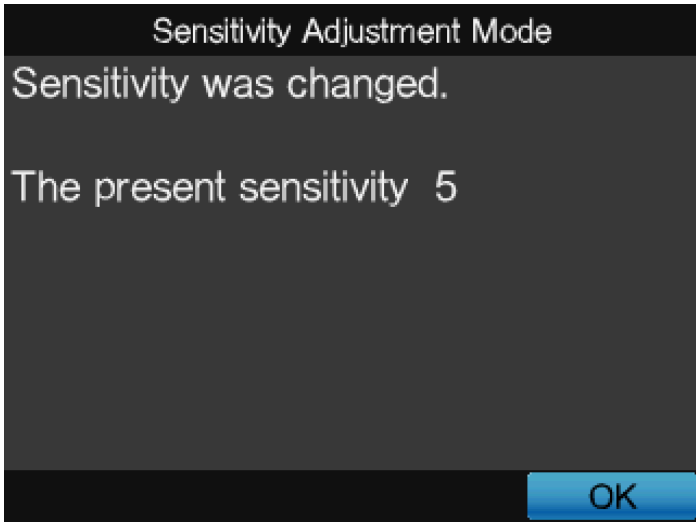
SMU-01417

- This displays the Sensitivity Adjustment screen.
  Use [LEFT] and [RIGHT] keys to select [Sensitive] or [Insensible] of the button display area, and press [A] key.
  After completion of sensitivity adjustment, use [LEFT] or [RIGHT] key to select [OK] of the button display area, and then press [A] key.
  When you cancel the sensitivity adjustment mode, select [Cancel] and press [A] key to return to the Work Support Menu screen.



SMU-01418

- This displays the Sensitivity Adjustment Completion screen.
  Press [A] key to return to the Work Support Menu screen.



SMU-01419

25-5-4. ID registration

Use this function to register a transmitter ID in the control module of the tire pressure monitor.
ID registration is required after the following repairs.

- Replacement of the transmitter
- Tire rotation (if the transmitter position is changed.)
- Replacement of the control module of the tire pressure monitor

It is necessary to refer to service manuals when you do this adjustment.
Adjust the tire pressure of every tire to the standard value.

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

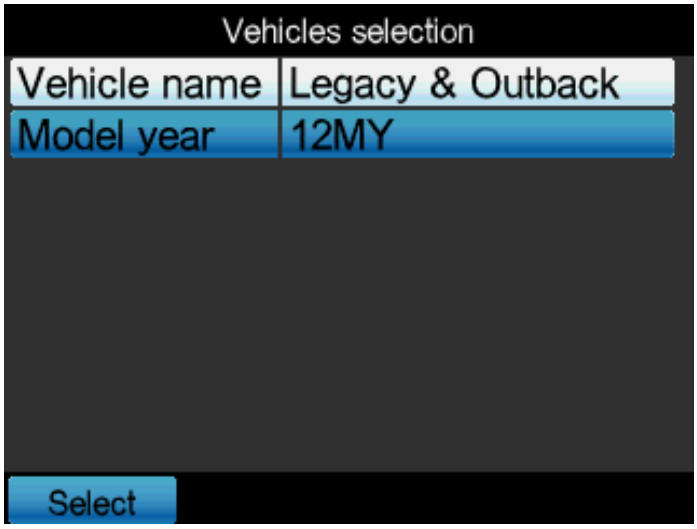
SMU-01381

- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

Notes
- Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
  Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.

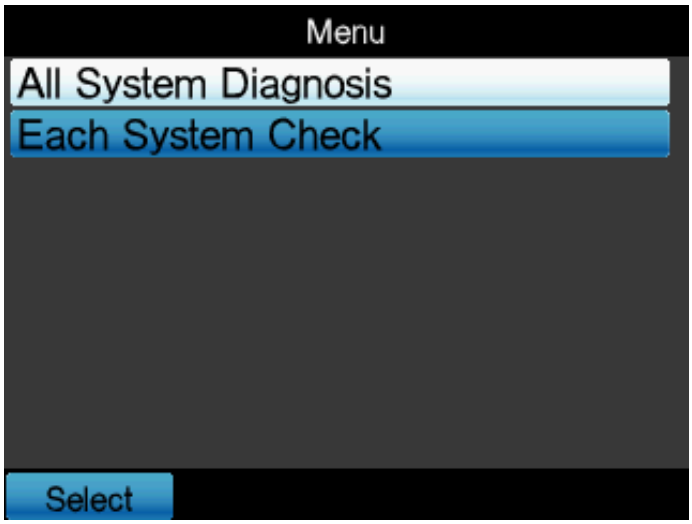


SMU-01382

- This displays the Inspection Menu screen.

  Use [UP] and [DOWN] keys to select [Each System Check], and then press [A] key.

  Press [B] key to return to the Vehicle Select screen.

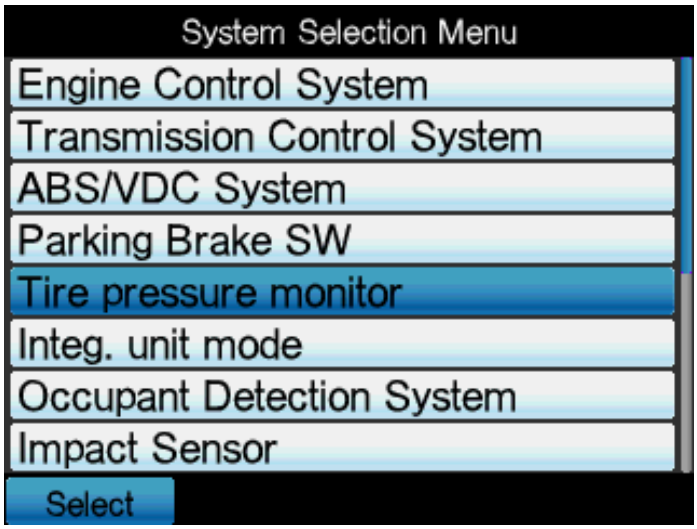


SMU-01388

- This displays the System Select screen.

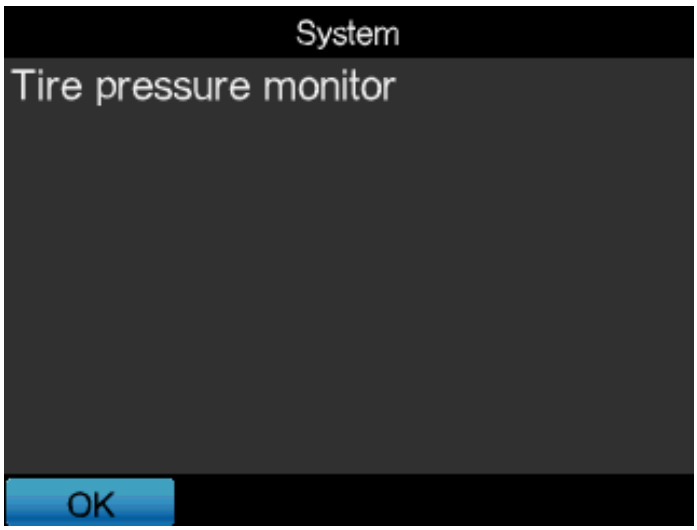
  Use [UP] and [DOWN] keys to select [Tire pressure monitor], and then press [A] key.

  Press [B] key to return to the Inspection Menu screen.



SMU-01420

- This displays the System Information Display screen for the system being diagnosed. Press [A] key.

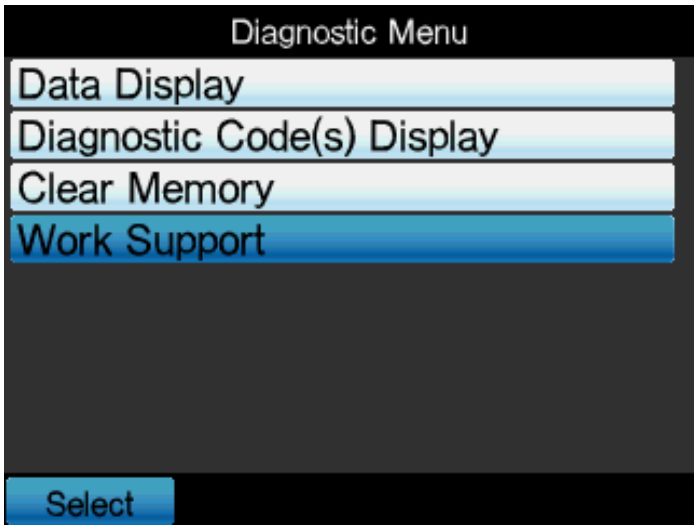


SMU-01421

- This displays the Diagnostic Menu screen.

  Use [UP] and [DOWN] keys to select [Work Support], and then press [A] key.

  Press [B] key to return to the System Select screen.

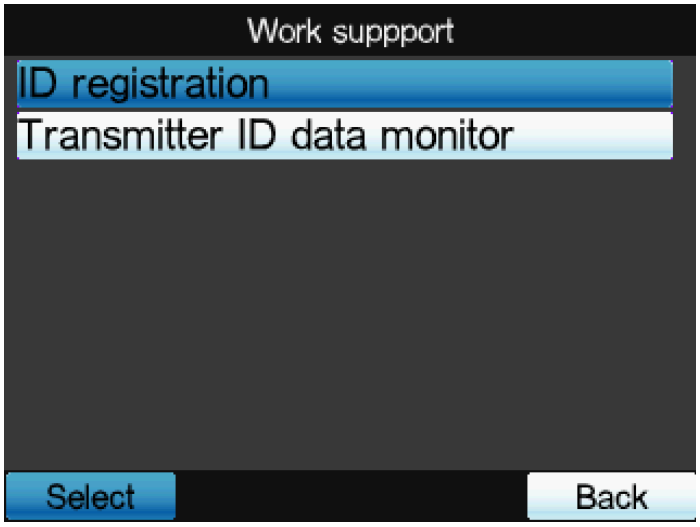


SMU-01422

- This displays the Work Support Menu screen.

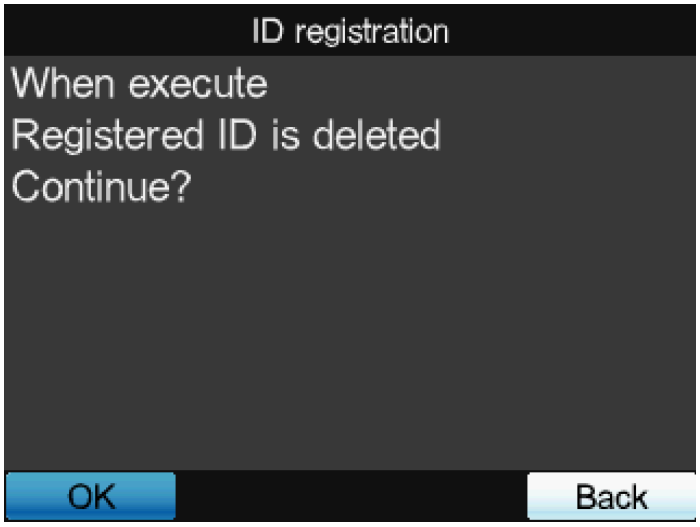
  Use [UP] and [DOWN] keys to select [ID registration]. Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and press [A] key.

  Press [B] key to return to the Diagnostic Menu screen.



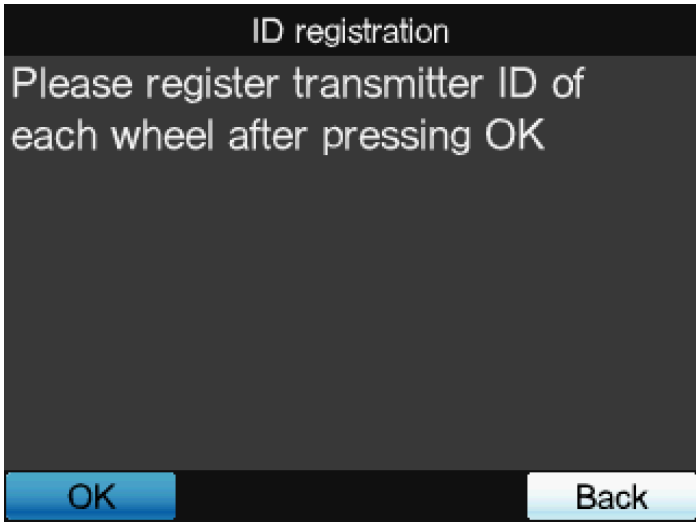
SMU-01423

- This displays the ID Registration Confirmation screen.
  Use [LEFT] and [RIGHT] keys to select [OK] of the button display area, and press [A] key.
  If you do not execute ID registration, select [Back] and press [A] key to return to the Work Support Menu screen.



SMU-01424

- This displays the ID Registration screen.
  Use [LEFT] and [RIGHT] keys to select [OK] of the button display area, and press [A] key.
  If you do not execute ID registration, select [Back] and press [A] key to return to the ID Registration Confirmation screen.

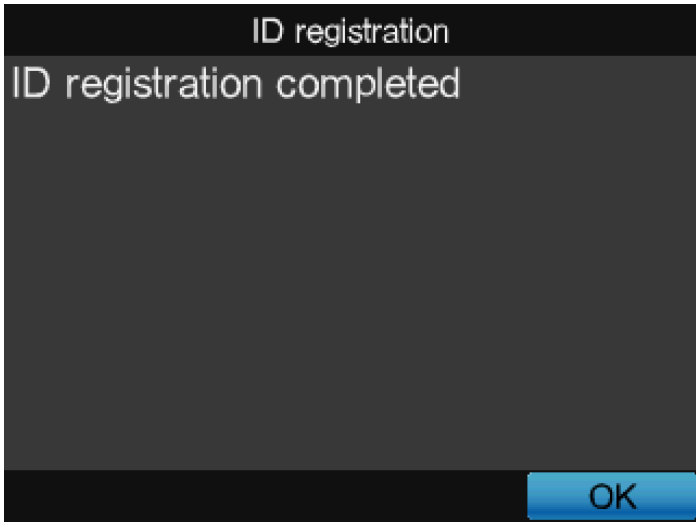


SMU-01425

- This displays the ID Registration Status Confirmation screen.
  After completion of ID registration of each tire, the display changes from [incomplete] to [complete].

SMU-01426

- This displays the ID Registration Completion screen.
  Press [A] key to return to the Work Support Menu screen.



SMU-01427

25-5-5. Transmitter ID data monitor

This function allows you to confirm the registered transmitter ID.
This function also transmits the ID data from the transmitter to the control module of the tire pressure monitor.

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

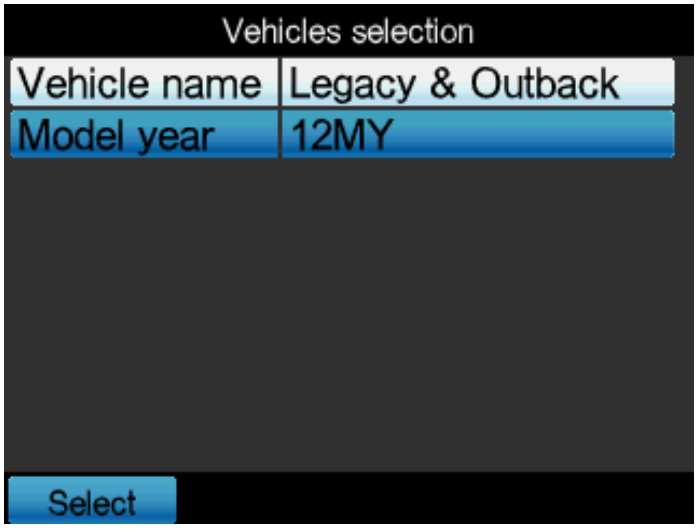
SMU-01381

- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

  Notes
  - Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
    Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.

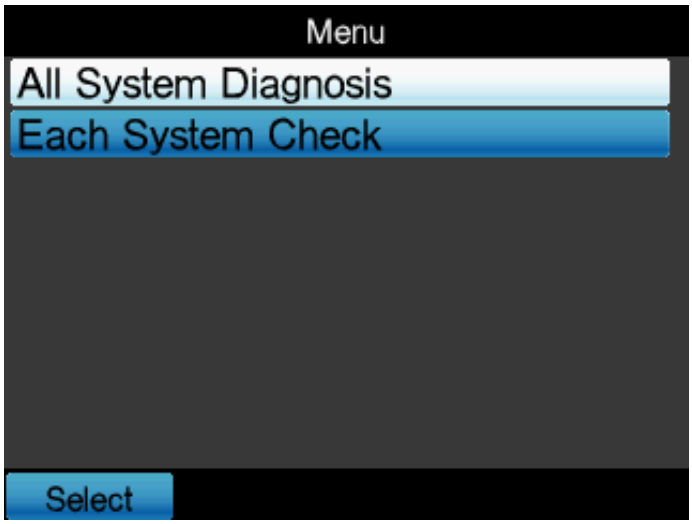


SMU-01382

- This displays the Inspection Menu screen.

  Use [UP] and [DOWN] keys to select [Each System Check], and then press [A] key.

  Press [B] key to return to the Vehicle Select screen.

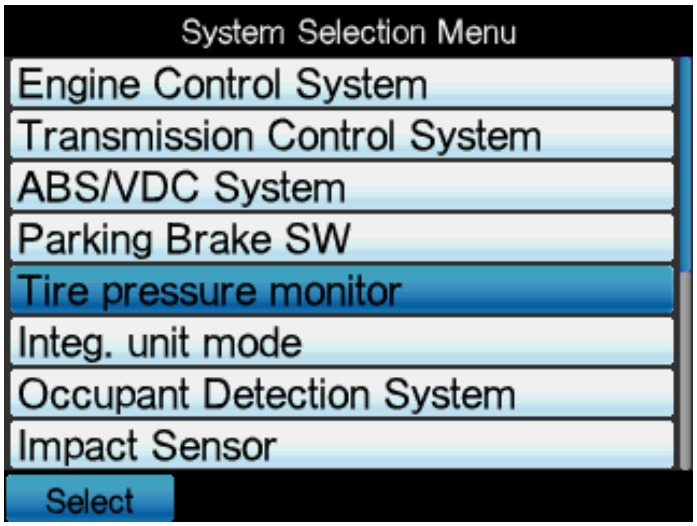


SMU-01388

- This displays the System Select screen.

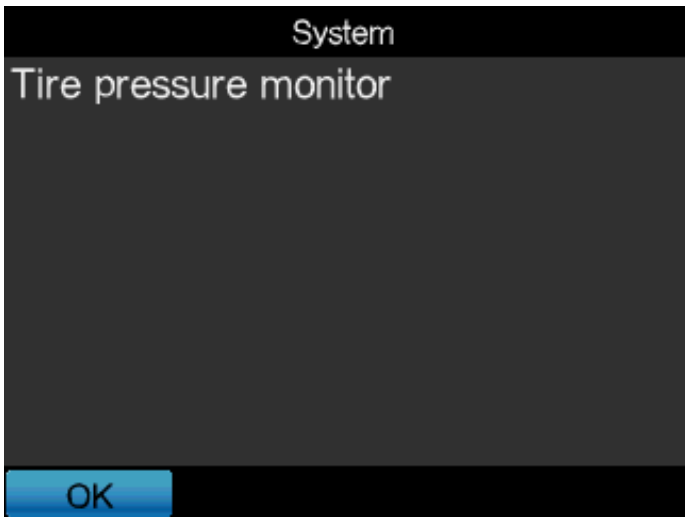
  Use [UP] and [DOWN] keys to select [Tire pressure monitor], and then press [A] key.

  Press [B] key to return to the Inspection Menu screen.



SMU-01420

- This displays the System Information Display screen for the system being diagnosed. Press [A] key.

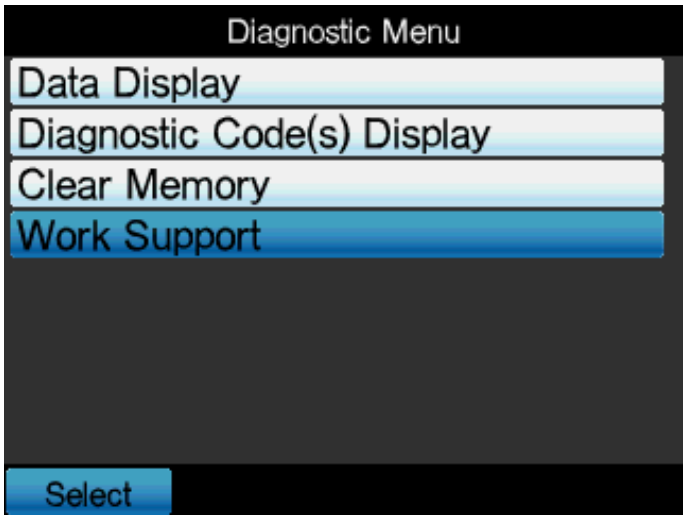


SMU-01421

- This displays the Diagnostic Menu screen.

  Use [UP] and [DOWN] keys to select [Work Support], and then press [A] key.

  Press [B] key to return to the System Select screen.



SMU-01422

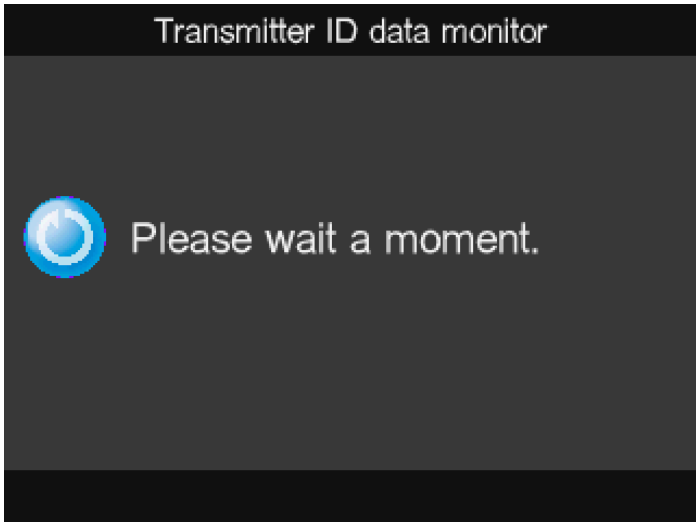
- This displays the Work Support Menu screen.

  Use [UP] and [DOWN] keys to select [Transmitter ID data monitor]. Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and press [A] key.

  Press [B] key to return to the Diagnostic Menu screen.

SMU-01428

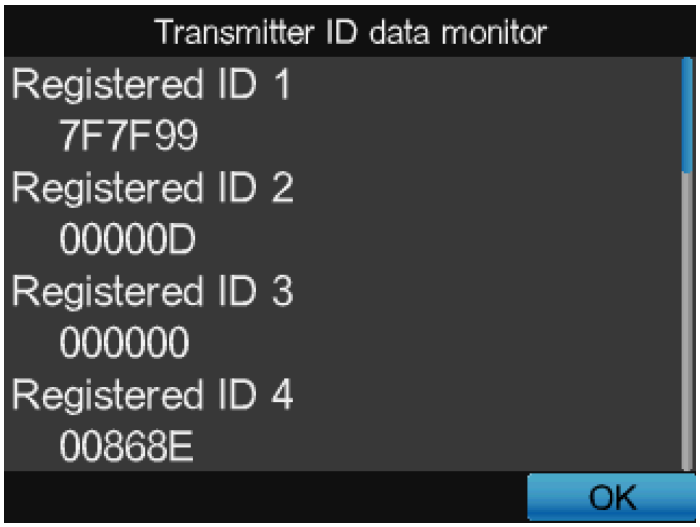
- The ID Reading screen will be displayed. Wait without any operation.



SMU-01429

- This displays the ID Data Monitor screen.

  Press [A] key to return to the Work Support Menu screen.



SMU-01430

25-6. Body Integrated Module Function Setting (Control Module Customizing)

The following procedure can be used to configure operational details, operation time, and other settings for the actuators controlled by the body integrated module.

Important

- Make sure you perform setting operations in accordance with the Service Manual when using the unit customization function. Configuring the wrong settings can cause abnormal system operation and other problems.

- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Diagnostic], and then press [A] key.

SMU-01381

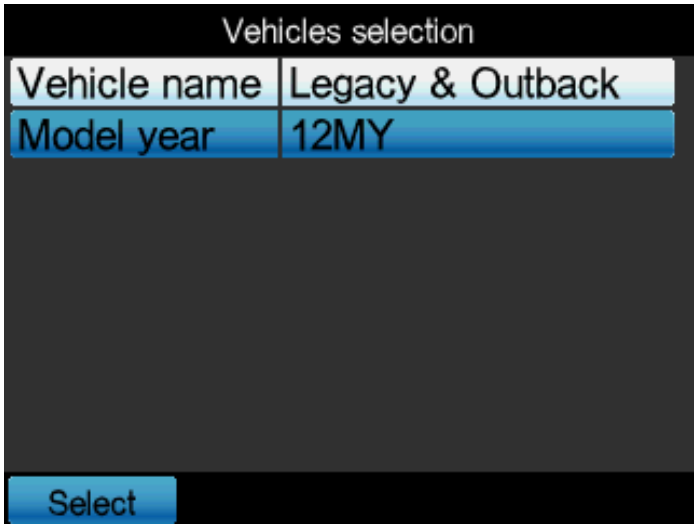
- This displays the Vehicle Select screen.

  Press [A] key after determination of vehicle.

  Press [B] key to clear the selected vehicle information. Press [B] key while a vehicle is not selected to return to the Main Menu screen.

Notes

- Use [LEFT] and [RIGHT] keys to select [Select] of the button display area, and pressing [A] key displays the Vehicle Name Select screen. Select a target vehicle name.
  Repeat to select vehicle information such as model until a vehicle is determined after selection of a vehicle name.

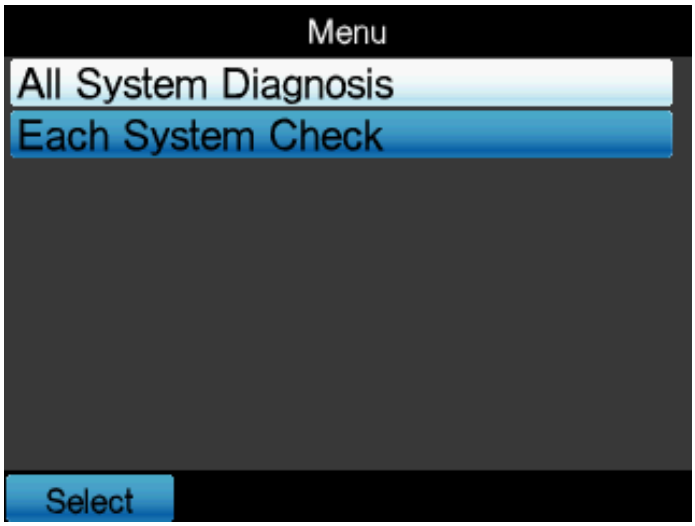


SMU-01382

- This displays the Inspection Menu screen.

  Use [UP] and [DOWN] keys to select [Each System Check], and then press [A] key.

  Press [B] key to return to the Vehicle Select screen.

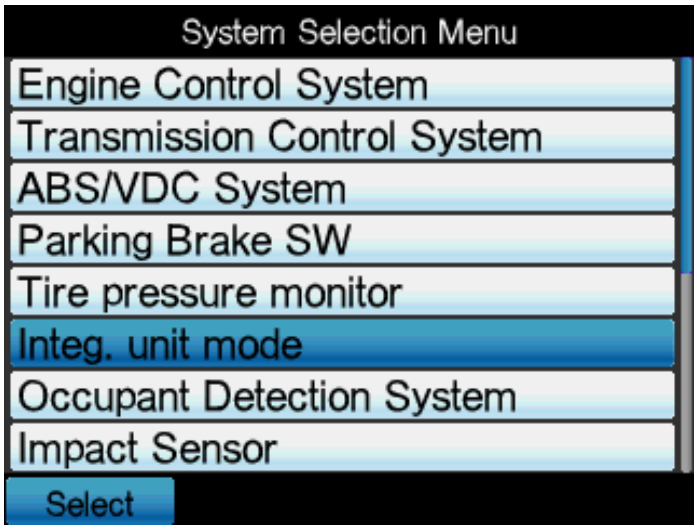


SMU-01388

- This displays the System Select screen.

  Use [UP] and [DOWN] keys to select [Integ. unit mode], and then press [A] key.

  Press [B] key to return to the Inspection Menu screen.

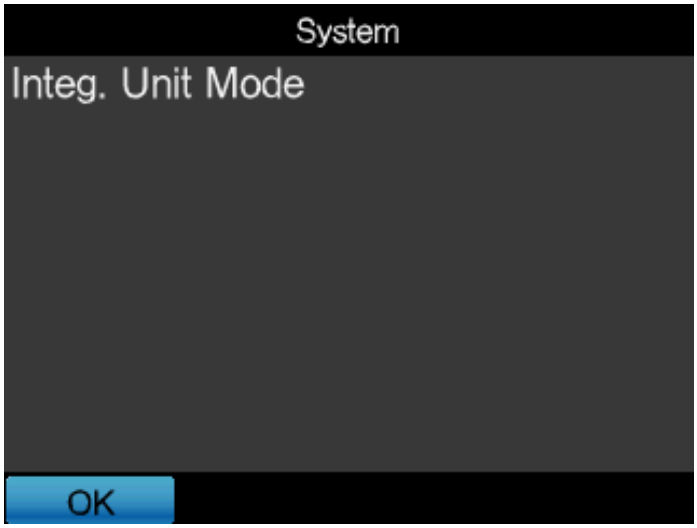


SMU-01431

Notes

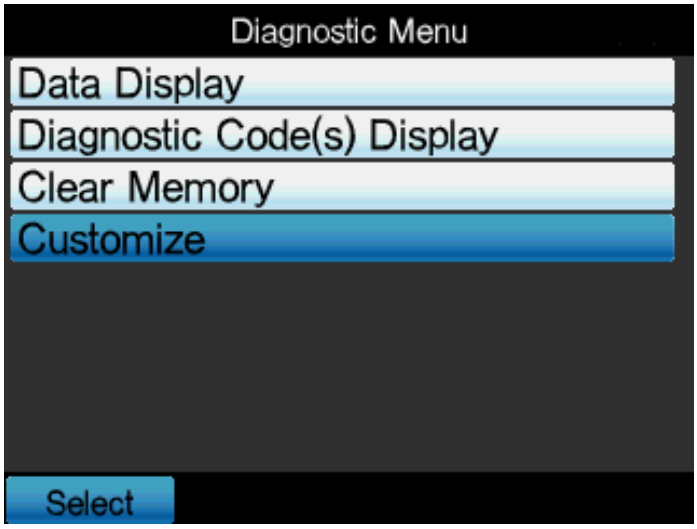
- To perform Automatic Light and Wiper Unit Customizing, select [Light & Wiper] at above screen and begin procedure.
- After removing or replacing rain/light sensor, initializing the sensor is necessary by selecting [Automatic Light and Wiper] on the above screen.
- To perform Auto Start Stop Unit Customizing, select [Auto Start Stop] at above screen and begin procedure.
- To perform Combination meter Unit Customizing, select [Combination meter] at above screen and begin procedure.

- This displays the System Information Display screen for the system being diagnosed. Press [A] key.



SMU-01432

- This displays the Diagnostic Menu screen.
  Use [UP] and [DOWN] keys to select [Customize], and then press [A] key.
  Press [B] key to return to the System Select screen.

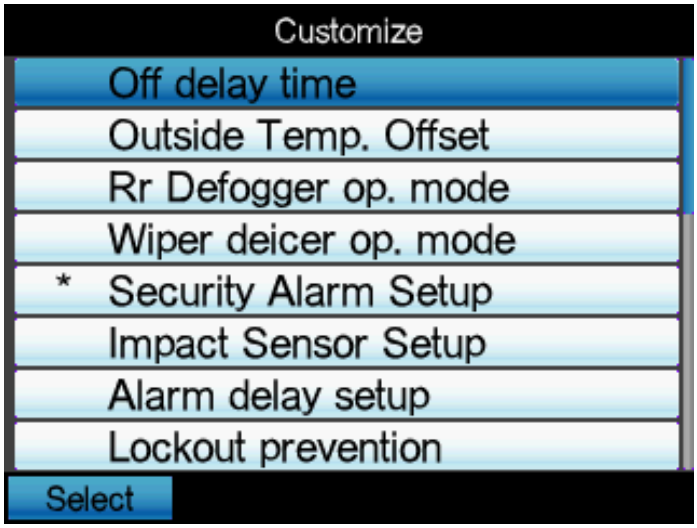


SMU-01433

- This displays the Customization Items Select screen.

  Use [UP] and [DOWN] keys to select the setting(s) to be configured, and then press [A] key. "For this example, [Off delay time] is selected."

  Press [B] key to return to the Diagnostic Menu screen.



SMU-01434

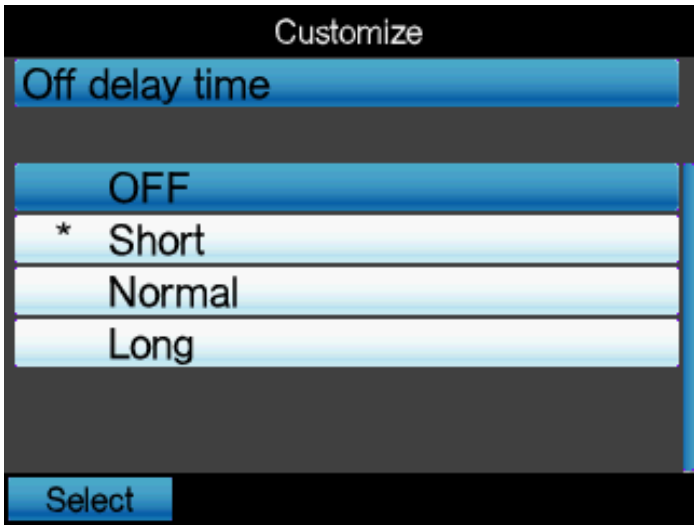
- This displays the Customization Setting Select screen.

  Use [UP] and [DOWN] keys to select the desired setting(s), and press [A] key.

  Press [B] key to return to the Customization Items Select screen.

Notes

- "*" is displayed at the left side of the current setting value(s).

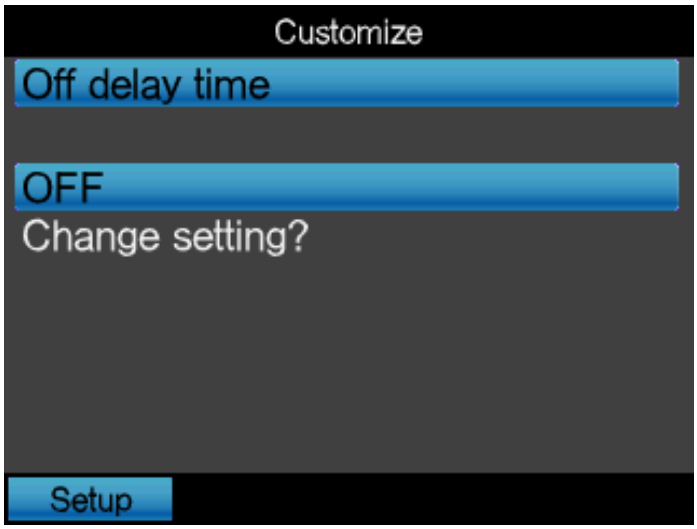


SMU-01435

- This displays the Customization Setting Confirmation screen.

  Press [A] key to change the current setting(s) to the displayed setting(s).

  Press [B] key to return to the Customization Items Select screen.



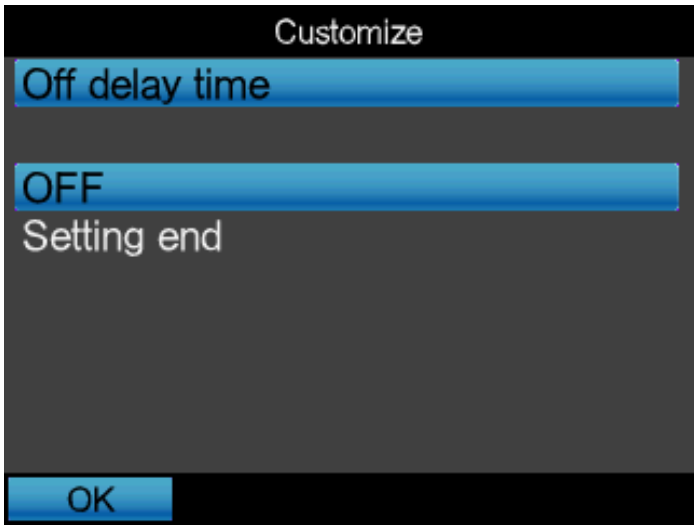
SMU-01436

- This displays the Customization Setting Completion screen.

  Press [A] key to return to the Customization Items Select screen.

Notes

- "*" is displayed at the left side of the item(s) of which setting(s) is changed.



SMU-01437

25-7. Registering the Immobilizer

Notes

- For information about registering immobilizer, please refer to the "REGISTRATION MANUAL FOR IMMOBILIZER".
- The REGISTRATION MANUAL FOR IMMOBILIZER also provides the procedure for registering the immobilizer from the PC application, but please understand that the content shown in the manual is a little different from the screens of this function.
- The G/H/I-type immobilizer cannot be registered using this function. Use the immobilizer registration function in the PC application.

25-8. Function Setup of DST-i

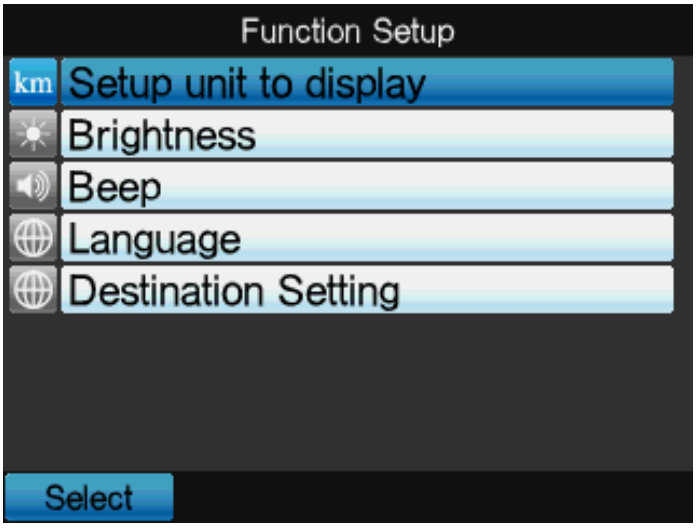
- On the Main Menu screen, use [LEFT] and [RIGHT] keys to select [Function Setup], and then press [A] key.

SMU-01438

- This displays the Function Setup Items Select screen.

  Use [UP] and [DOWN] keys to select the setting(s) to be configured, and then press [A] key.

  Press [B] key to return to the Main Menu screen.

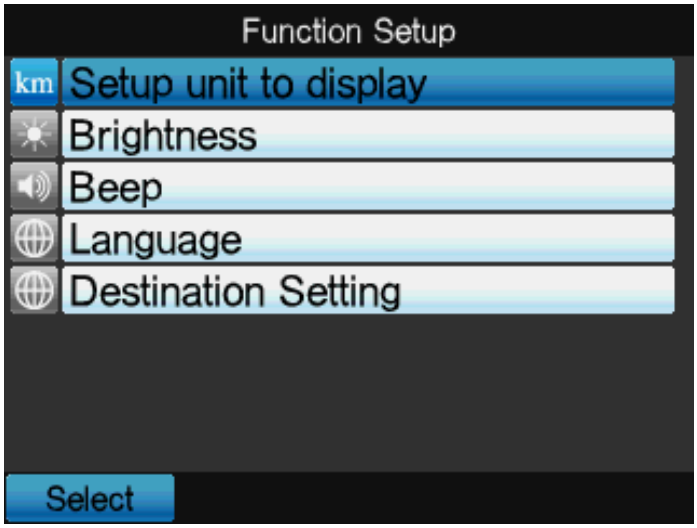


SMU-01439

25-8-1. Selecting Units

This item specifies the units for sampled items displayed on DST-i screens.

- On the Function Setup Items Select screen, use [UP] and [DOWN] keys to select [Unit], and then press [A] key.

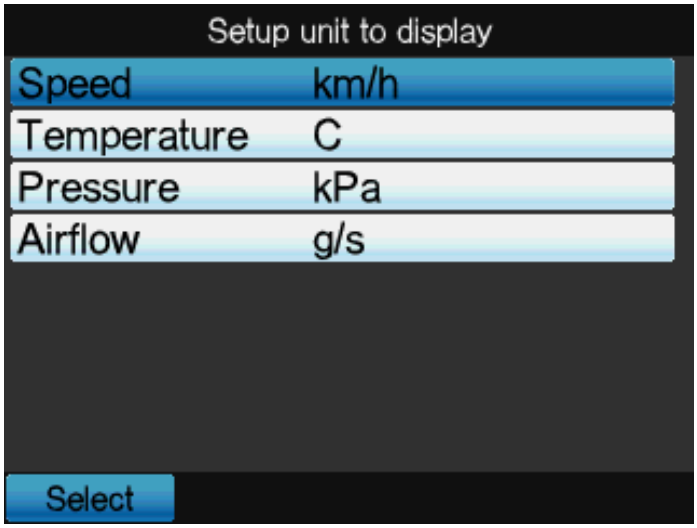


SMU-01439

- This displays the Unit Setting Items Select screen.

  Select the setting(s) to be configured, and then press [A] key.

  Press [B] key to return to the Function Setup Items Select screen.



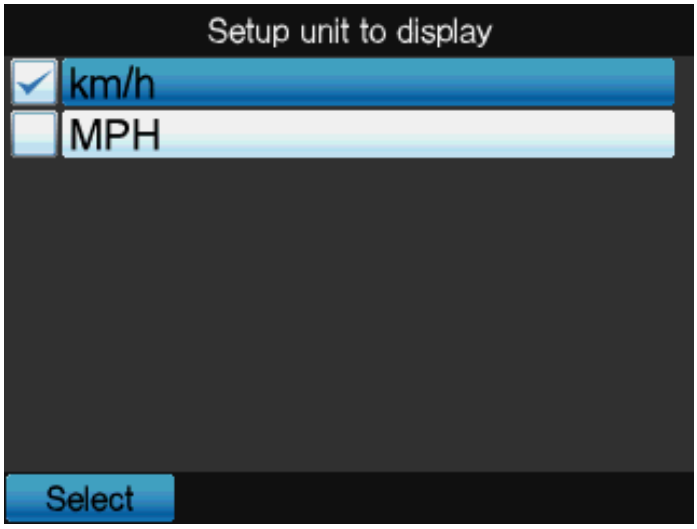
SMU-01440

- This displays the Unit Select screen.

  Use [UP] and [DOWN] keys to desired units.

  Press [A] key to change the current setting(s) and return to the Unit Setting Items Select screen.

  Press [B] key to return to the Unit Setting Items Select screen without setting change.

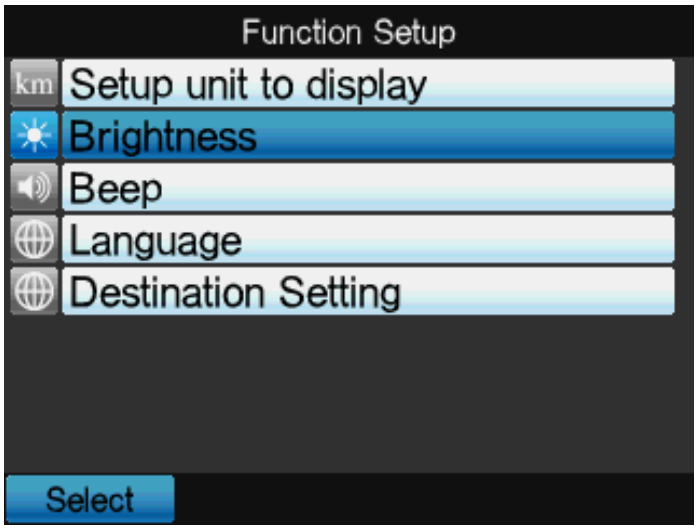


SMU-01441

25-8-2. Brightness Setting

The brightness of the LCD can be adjusted to make its contents easier to view.

- On the Function Setup Items Select screen, use [UP] and [DOWN] keys to select [Brightness], and then press [A] key.



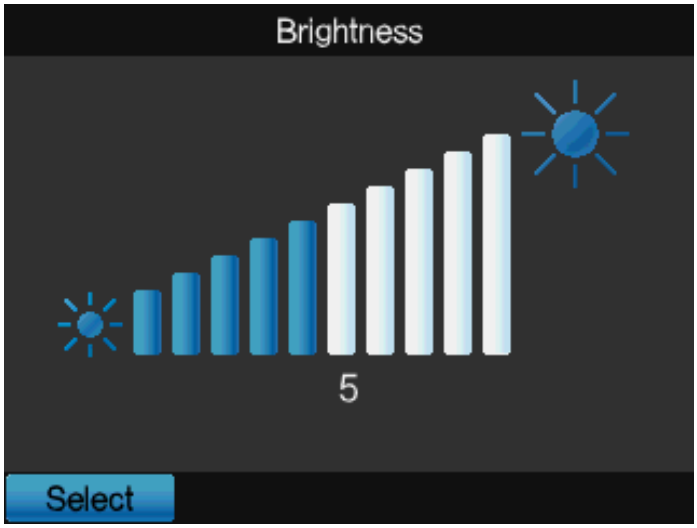
SMU-01442

- This displays the Brightness Setting screen.

  Use [LEFT] and [RIGHT] keys to adjust the brightness.

  Press [A] key to change the current setting(s) and return to the Function Setup Items Select screen.

  Press [B] key to return to the Function Setup Items Select screen without setting change.

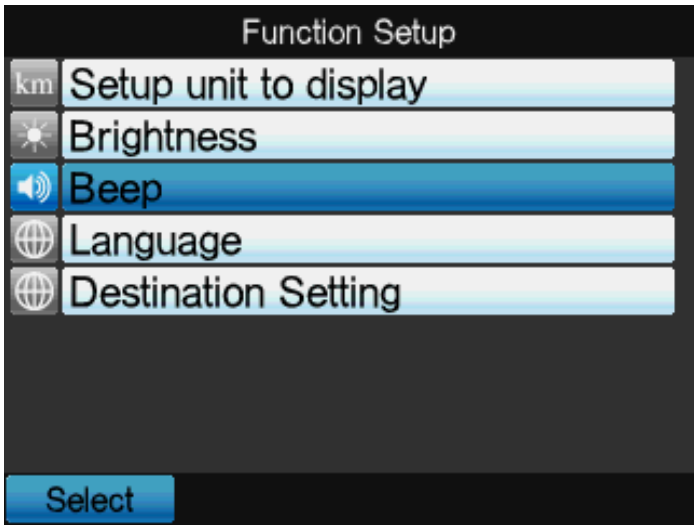


SMU-01443

25-8-3. Buzzer Setting

This setting turns the DST-i key operation confirmation buzzer on and off.

- On the Function Setup Items Select screen, use [UP] and [DOWN] keys to select [Beep], and then press [A] key.



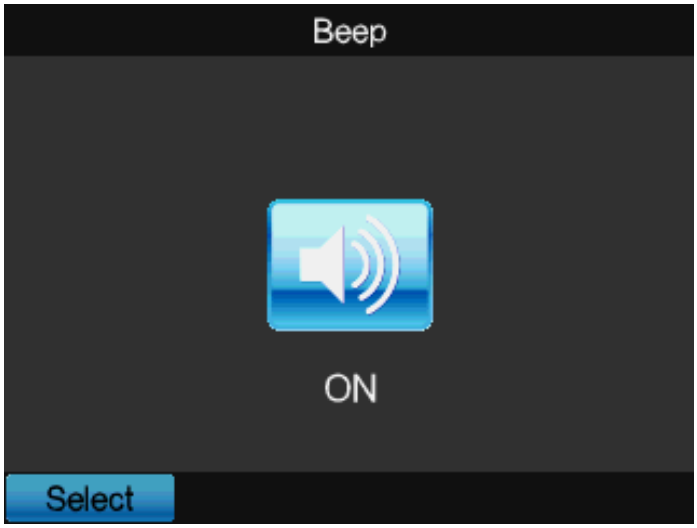
SMU-01444

- This displays the Buzzer Setting screen.

  Use [LEFT] and [Right] keys to select ON or OFF.

  Press [A] key to change the current setting(s) and return to the Function Setup Items Select screen.

  Press [B] key to return to the Function Setup Items Select screen without setting change.

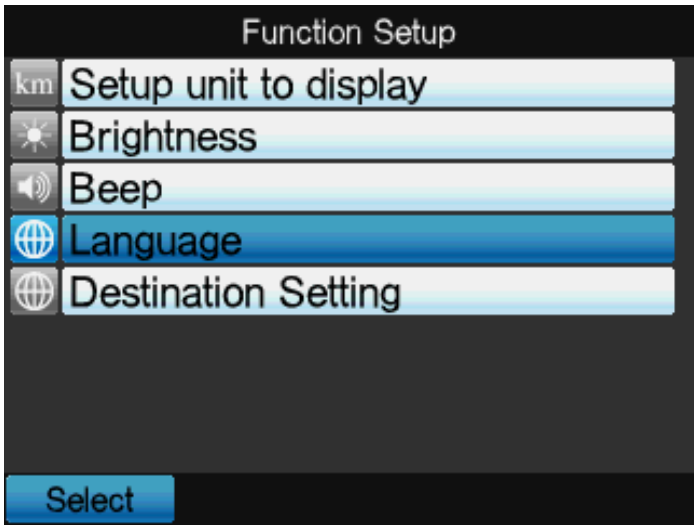


SMU-01445

25-8-4. Selecting a User Language

This item can be used to select the display language for DST-i screens.

- On the Function Setup Items Select screen, use [UP] and [DOWN] keys to select [Language], and then press [A] key.



SMU-01446

- This displays the Language Select screen.

  Use [UP] and [DOWN] keys to select the desired language.

  Press [A] key to change the current setting(s) and return to the Function Setup Items Select screen.

  Press [B] key to return to the Function Setup Items Select screen without setting change.

SMU-01447

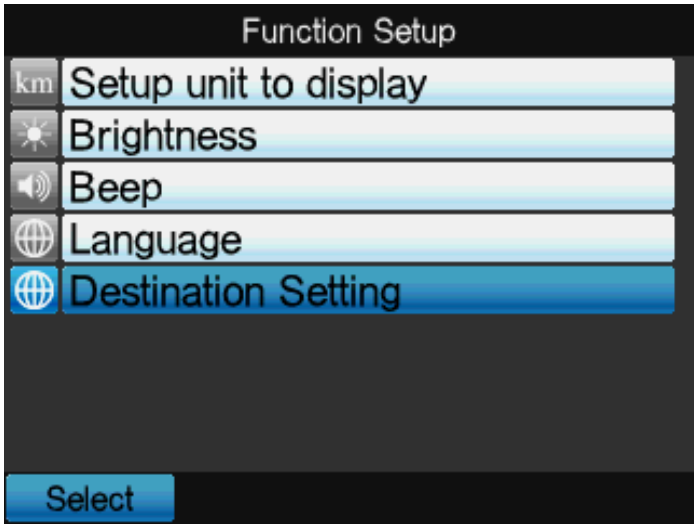
25-8-5. Area Setting

A sales area of diagnosis target vehicle can be set.

Notes

- Diagnosis-available vehicle and system vary in the case of a area.

- On the Function Setup Items Select screen, use [UP] and [DOWN] keys to select [Destination Setting], and then press [A] key.



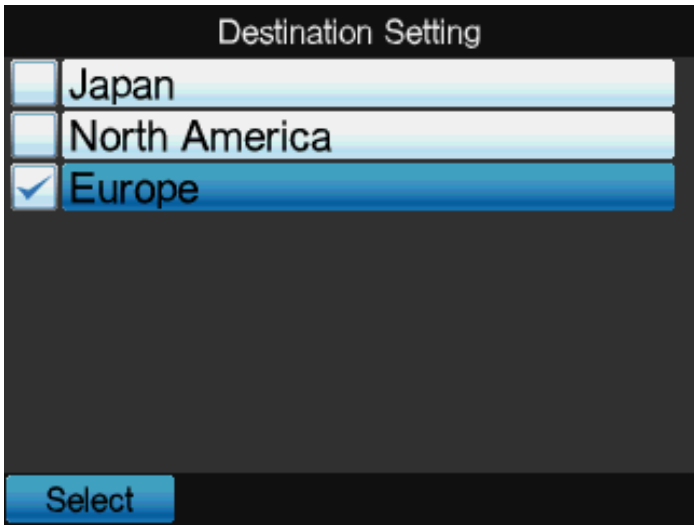
SMU-01448

- This displays the Area Select screen.

  Use [UP] and [DOWN] keys to select the desired area.

  Press [A] key to change the current setting(s) and return to the Function Setup Items Select screen.

  Press [B] key to return to the Function Setup Items Select screen without setting change.



SMU-01449

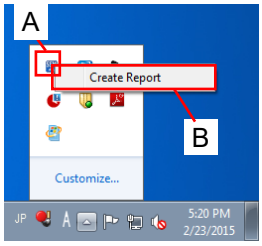
When errors occur

Creating the user feedback report

Error-related information can be exported when errors occur.

- Select <B> "Create Report" from the <A> in the task bar notification area.

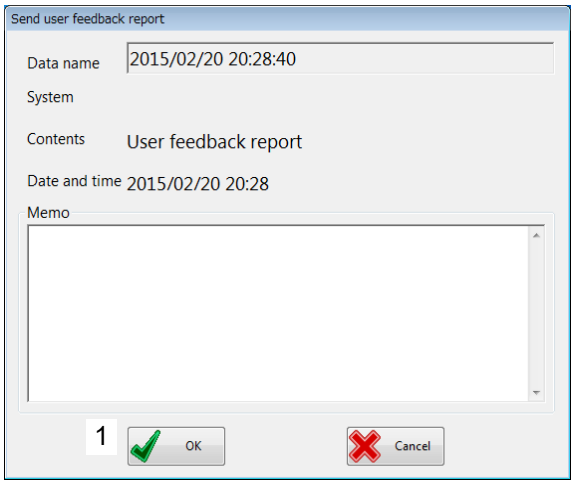
Task bar notification area to the bottom-right of the PC screen



SMU-00199

This displays the create report screen.

Create report screen



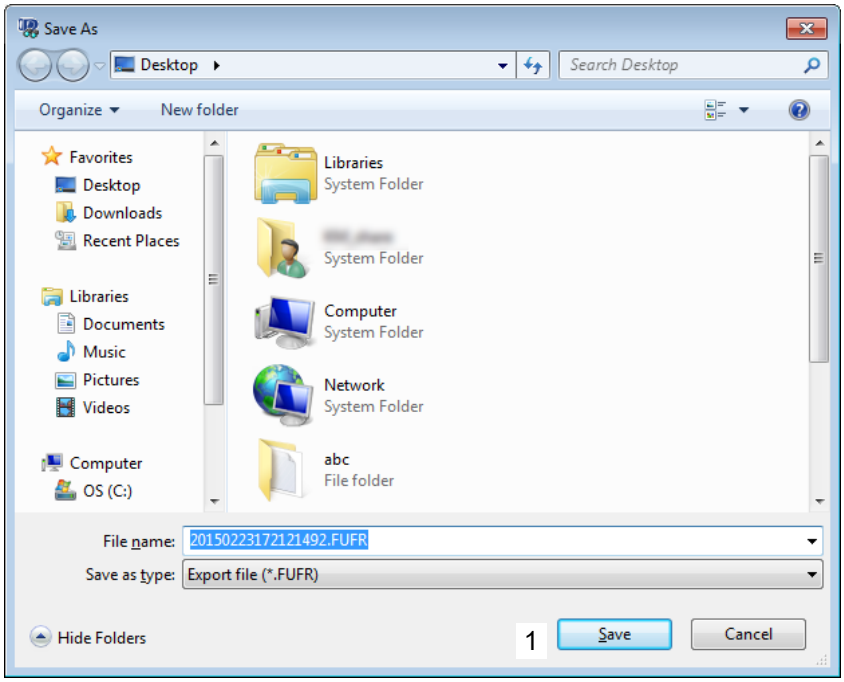
SMU-00200

Notes

- Enter the state when the error occurred and any information necessary for error analysis in the memo field.

- Click <1> “OK” on the create report screen to display the save screen of the user feedback report.

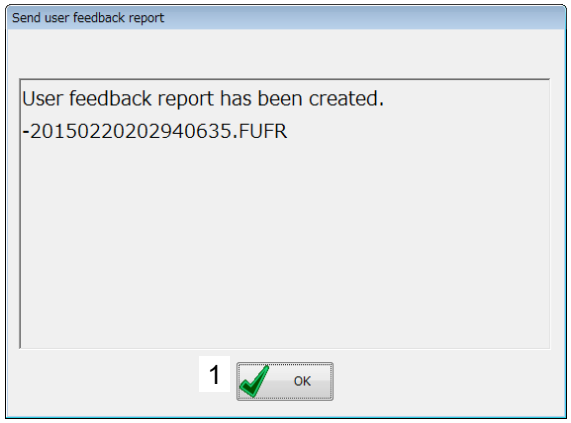
Save screen



SMU-00201

- After selecting the desired save location, click <1> "Save" on the save screen to save the user feedback report and display the save complete screen.

Save complete screen



SMU-00202

- Click <1> “OK” on the save complete screen to close the screen.

Control Module Reprogramming Error Code List

Control Module Reprogramming Error Code List (PC Display)

Error Code	Error Message	Cause	Corrective action
102	Cannot open file.	If failed to open the PAK file.	1. Make sure if the PAK file is correct. 2. Close all applications opened. 3. Re-start Windows. 4. Re-install SSMIII (PC application).
103	Error occurred while reading file.	If failed to read from the PAK.	1. Make sure if the PAK file is correct. 2. Close all applications opened. 3. Re-start Windows. 4. Re-install SSMIII (PC application).
104	Error occurred while writing file.	If failed to write to the PAK file.	1. Make sure if there is enough space in selected drive for its safe. 2. Make sure if the PAK file is correct. 3. Close all applications opened. 4. Re-start Windows. 5. Re-install SSMIII (PC application).
105	The file's format is invalid. Specify a correct file.	If the PAK file format is invalid.	1. Make sure if the PAK file is correct. 2. Close all applications opened. 3. Re-start Windows. 4. Re-install SSMIII (PC application).
107	Error occurred in the encryption.	If failed to encrypt the PAK file.	1. Close all applications opened. 2. Re-start Windows. 3. Re-install SSMIII (PC application).
108	Error occurred in the decryption. Check the decryption keyword.	If failed to create a complex file.	1. Confirm the complexed key word. 2. Make sure if the PAK file is correct.
1000	Memory allocation error occurred.	If the PC memory does not have enough space.	1. Close all applications opened. 2. Re-start Windows.
1001	The file's format is invalid or not supported.	If the PAK file format is invalid.	Make sure if the PAK file is correct.
4000	Cannot make a thread.	It might be a lack of memories, opened too many applications simultaneously or etc.	1. Close all applications opened. 2. Re-start Windows.
4001	Cannot find the Pass-Thru device.	Cannot find the Pass-thru device, which is registered the registry.	Re-install SSMIII (PC application).

Error Code	Error Message	Cause	Corrective action
4004	Received Invalid ECU messages.	If a format of the message received from control module is invalid.	1. Make sure if the ignition switch is in "ON" position. 2. Re-try after the data link connector is connected. 3. Confirm the connection of the USB cable.
4007	NO response from the ECU. Check the cause of NO response.	1. If there is no response from control module. 2. Displayed if the connector causes a connection failure. It might be a harness failure as well.	1. Make sure if the ignition switch is in "ON" position. 2. Re-try after the data link connector is connected. 3. Check the harness of the vehicle. 4. Replace control module if the above 1, 2 & 3 methods do not work.
4009	Received invalid ECU identification (SSMID).	If the control module identification (SSM ID) received from control module is invalid.	1. Make sure if the ignition switch is in "ON" position. 2. Re-try after the data link connector is connected. 3. Confirm the connection of USB.
4011	Cannot reprogram while the engine is running. Stop the engine to retry.	If an engine revolution is detected by the reprogramming condition check.	Shut-down the engine.
4013	Connect the test mode connector and click OK to retry.	If you detect the delivery mode fuse (test mode connector) not connected by the reprogramming condition check.	Make sure if the delivery mode fuse (test mode connector) is connected.
4014	The read memory switch is not connected. Connect the read memory switch to retry.	If you detect the read memory connector not connected by the reprogramming condition check.	Make sure if the read memory connector is connected.
4015	The ignition switch turns off. Retry from the beginning.	If an ignition OFF is detected by the reprogramming condition check.	Make sure if the ignition switch is in "ON" position.
4016	The shift position is not P. Select the "P" position to retry.	If you detect the shift range is not the "P" range by the reprogramming condition check.	Make sure if the shift range is in "P" position.
4018	Battery voltage is out of specified range. Reprogramming cannot be done.	If you detect the battery voltage is out of the range of standardized range by the reprogramming condition check. (Standardized range of the battery voltage: 10V to 14V)	1. Replace the battery with a new one or charge the battery. It is prohibited to rewrite during battery charging. 2. As for the case of "Off the Car" reprogramming, adjust generated voltage of the inverter within the range of the standard voltage.
4019	ECU flash ROM is not rewritable. Reprogramming is aborted.	If you detect the flash ROM in control module is not rewritable by the reprogramming condition check.	Re-try from the first step after ignition OFF.

Error Code	Error Message	Cause	Corrective action
4021	Error occurred while rewriting. Reprogramming is aborted.	If an error on the check sum after the control software is transferred is detected. (Failed to transfer the control software.)	1. Make sure if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB cable. 4. Re-try from the first step after ignition OFF.
4022	Error occurred while rewriting. Reprogramming is aborted.	If an error on the check sum after the application software is transferred is detected. (Failed to transfer the application software.)	1. Make sure if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB connection. 4. Re-try from the first step after ignition OFF.
4023	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while the control software is transferred.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4024	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while the application software is transferred.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4025	The ECU does not have valid identification of after rewriting. Rewriting may not be complete.	If a ROM ID after the reprogramming did not match with an expected one.	Make sure if the PAK file is correct.
4028	Latest logic has already been installed.	If you try to re-execute reprogramming on control module, which has already been reprogrammed. (If the control module has already been updated.)	Reprogramming is not necessary.
4029	This ECU is not suitable for reprogramming.	If you perform reprogramming on control module, which is not registered in the PAK file. (If control module is not the one applicable.)	1. Make sure if the PAK file is correct. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4030	Cannot erase the Flash ROM on the ECU. Reprogramming is aborted.	If failed to erase the flash ROM on control module.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4031	Error occurred in communication. Reprogramming is aborted.	If failed to restart (reset) control module.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.

Error Code	Error Message	Cause	Corrective action
4032	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Start Communication).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4033	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Access Timing Parameter).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4034	The verification has failed. Reprogramming is aborted.	If an error occurs during the security verification before the reprogramming.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4035	Error occurred in communication. Reprogramming is aborted.	If a communication error occurs while the condition check for reprogramming.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4036	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Request Download).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4037	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Start Diagnostic Session).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4040	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with control module (Transfer Data).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4041	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with control module (Check SUM).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.

Error Code	Error Message	Cause	Corrective action
4042	Cannot clear the memory.	If an error occurs while communicating with the control module (Memory Clear). It may occur the error if the ignition key is operated too quickly. (Wait 3 seconds after the ignition key is off.)	1. Perform the following steps. 1) The ignition key is OFF for 3 seconds, then ignition key is ON for 3 seconds. 2) Perform memory clear by using SSM4. 3) The ignition key is OFF for 3 seconds. If reprogramming starts, it is successful. 2. Make sure the connection of the USB connector.
4043	Cannot erase the Flash ROM on the ECU. Reprogramming is aborted.	If an error occurs while communicating with control module (Erase Flash).	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4045	Cannot reprogram when the vehicle is running. Stop the vehicle to retry.	If speed of the vehicle is detected by the reprogramming condition check.	The vehicle stops. (vehicle speed is zero).
4046	Error occurred in the Pass-Thru device.	If an error is detected from the pass-thru device's error.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection.
4046:7	Cannot open communication port.	If DST-i is not connected.	1. Make sure if the ignition switch is in 'ON' position. 2. Confirm if the power of DST-i is ON. 3. Re-try after the data link connector is reconnected. 4. Make sure the connection of the USB cable.
4047	Programming voltage is below specified low limit. Reprogramming is aborted.	If the voltage (Vpp) for writing is below the standard. It might be a harness failure.	1. Check the harness of the vehicle. 2. Replace control module.
4048	Programming voltage is above specified high limit. Reprogramming is aborted.	If the voltage (Vpp) for writing is higher than the standard.	1. Check the harness of the vehicle. 2. Replace control module.
4049	Programming voltage is out of specified range. Reprogramming is aborted.	If the voltage (Vpp) for writing does not meet the standard. It might be a harness failure.	1. Check the harness of the vehicle. 2. Replace control module.
4053	Cannot set reprogramming voltage. Reprogramming is aborted.	If failed to apply the voltage (Vpp) for writing.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection.
4054	Cannot find the supported device. Reprogramming is aborted.	If the pass-thru device registered in the registry cannot be found.	Re-install SSM4. (PC application)
4055	Entry of boot mode has failed.	Migration to the control module reprogramming mode is failed.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.

Error Code	Error Message	Cause	Corrective action
4056	Error occurred in communication.	Communication error.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection.
4057	Latest logic has already been installed.	If the sub-logic has already been updated when the main logic and the sub-logic are rewritten simultaneously.	Reprogramming is not necessary.
4058	Latest logic has already been installed.	If the main logic has already been updated when the main logic and the sub-logic are rewritten simultaneously.	Reprogramming is not necessary.
4059	No response from the ECU.	If no response from the sub-logic when the main logic and the sub-logic are rewritten simultaneously.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4060	No response from the ECU.	If no response from the main logic when the main logic and the sub-logic are rewritten simultaneously.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4061	This ECU is not suitable for reprogramming.	If the sub-control module is not an applicable one when the main logic and the sub-logic are rewritten simultaneously.	Reprogramming is not necessary.
4062	Rewrite is not done.	If there is no applicable control module for reprogramming.	Reprogramming is not necessary.
4063	The delivery mode connector is not connected. Connect the delivery mode connector to retry.	If the delivery mode fuse (test mode connector) is not connected.	Make sure the connection of the delivery mode fuse (test mode connector).
4064	Auto Mode is not valid for this vehicle. Use Manual Mode.	If the auto mode is selected to the manual selection data.	Perform reprogramming after selecting the manual mode.
4065	Selected PART NO/ROM ID are not for this vehicle. Select the Part NO/ROM ID again.	The error occurs if a vehicle is not the one with selected parts number and the ROM ID, which are specified when the manual selection was rewritten.	Perform reprogramming by re-selecting the applicable one for writing in the manual mode.
4066	Session mode failure. Turn off the ignition switch and retry.	Error on the session mode due to it is the default session. * If it is the default session after the session was changed to the extended session.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.
4067	Session mode failure. Turn off the ignition switch and retry.	Error on the session mode due to it is the programming session. * If it is the programming session while the initial communication. * If it is the programming session after the session was changed to the extended session.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.

Error Code	Error Message	Cause	Corrective action
4068	Session mode failure. Turn off the ignition switch and retry.	Error on the session mode due to it is the extended session. * If it is the extended session while the initial communication.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.
4100	Version code of software for rewrite control is NG.	If the version of the control software in control module is not correct.	Make sure if the PAK file is correct.
4101	Error on rewrite data in flash ROM.	If an error occurs during control module rewriting.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4102	Communication speed (bps) cannot be set.	If the baud rate which does not meet control module standard is specified by control module.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Re-try from the first step after ignition OFF.
4103	Rewrite time exceeds the limit.	If exceeded the limit of the number of control module reprogramming.	Replace control module.
4104	The range of the Rewriting Voltage is not satisfied. Check the contact of OBD Connector. After try to rewrite again.	If the voltage (Vpp) input to the control module for writing does not meet the standard. (Judged by control module). It might be a harness failure.	1. Re-try by reconnecting the cable connector or replace the cable with a new one due to it might be a contact failure of the connector. 2. Make sure the harness of the vehicle.
4105	Software for rewrite control is NG.	If the control software on control module is not correct.	Make sure if the PAK file is correct.
4106	Rewritten software for engine control in ECM is NG.	If the engine control software on control module is not correct.	Make sure if the PAK file is correct.
4107	Error occurred in communication.	Communication error with control module.	Re-try from the first step after the ignition OFF.
4108	Programming voltage is below specified low limit. Reprogramming is aborted.	Communication error.	Re-try from the first step after the ignition OFF.
4150	"Is IG. SW on?", "Engine is stalling." Procedure is trying again.	The error for rewriting request on control module. Control module refuses its rewrite. If the engine is running or the ignition is OFF.	1. Keep the following steps. 1) Stop the engine. 2) The Ignition key is in "ON" position. 2. If the above "1" do not work, replace control module with a new one.
4152	No response from ECM to rewrite signal.	No response from control module on the error with rewriting request. This error is displayed once only after the communication can be done. It might be a disconnection error such as a contact failure during the rewriting. Also, it may be a harness failure.	1. Re-try after the data link connector is reconnected. 2. Make sure the harness of the vehicle.

Error Code	Error Message	Cause	Corrective action
4153	No response from ECM.	The error not responded from control module.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Make sure the harness of the vehicle.
4155	Rewrite voltage is NG. Is connector connection OK? After confirmation, click "OK" then return to forward Vpp signal.	Voltage (Vpp) for writings input to the control module is reported as an error. It is judged by control module. Displayed if the voltage for writings is not normal. It might be a harness failure.	1. Re-try by reconnecting the cable connector or replace the cable with a new one due to it might be a contact failure of the cable. 2. If the above action does not work, replace the control module with a new one.
4157	Received error code signal of flash ROM.	Communication error on control module. control module judged that an error on the rewriting. If a rewriting error occurs in control module.	Replace the control module with a new one. (control module failure).
4401	Error occurred while rewriting. Click "YES" to reprogram again.	Confirmation on retry after the rewriting error.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Confirm if the PAK file is correct. 4. Re-try from the first step after the ignition OFF.
4402	Error in rewritten data verifying. Click "YES" to reprogram again.	Confirmation on retry after the verifying error.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Confirm if the PAK file is correct. 4. Re-try from the first step after the ignition OFF.
4403	Turn off the ignition switch and retry. If the error repeats, possibly CAN failure.	If the message, "Off the car Reprogramming?", appeared and you clicked "No", although it was not reprogrammed off the car. (If you do the reprogramming on the car, normally the message, "Off the car Reprogramming?", does not appear.)	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.
4404	Failed to change the session mode. Reprogramming is aborted.	If an error occurs while communicating with control module (Diagnostic Session Control).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.

Error Code	Error Message	Cause	Corrective action
4405	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Control DTC Setting).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4406	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Communication Control).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4407	The verification has failed. Reprogramming is aborted.	If an error occurs on security verification before the reprogramming.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4408	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Request Download).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4409	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while transfer the program.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4411	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with control module (Request Transfer Exit).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4412	Error occurred while rewriting. Reprogramming is aborted.	If an error is detected on the check SUM after the program was transferred or no response to the requirement.	1. Confirm if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB connection. 4. Re-try from the first step after the ignition OFF.

Error Code	Error Message	Cause	Corrective action
4413	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Request Download).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4414	Cannot erase the Flash ROM on the ECM. Reprogramming is aborted.	If the control module flash ROM cannot be deleted.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF.
4415	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while transfer the program.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4416	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with control module (Request Transfer Exit).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4417	Error occurred while rewriting. Reprogramming is aborted.	If an error is detected on the check SUM after the program was transferred or no response to the requirement.	1. Confirm if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB connection. 4. Re-try from the first step after the ignition OFF.
4418	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Request Upload).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4419	Error occurred in communication. Reprogramming is aborted.	If an error occurs while communicating with control module (Read out ROM) or while the verification.	1. Confirm if the PAK file is correct. 2. Re-try after the data link connector is reconnected. 3. Confirm the connection of the USB connection. 4. Re-try from the first step after the ignition OFF.

Error Code	Error Message	Cause	Corrective action
4420	Error occurred while rewriting. Reprogramming is aborted.	If an error occurs while communicating with control module (Request Transfer Exit). (Read out ROM)	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4421	Cannot clear the memory.	If an error occurs while communicating with control module (Memory clear).	1. Perform the following steps. 1) The ignition key is OFF for 3 seconds, then ignition key is ON for 3 seconds. 2) Memory clear by using SSM4. 3) The ignition key is OFF for 3 seconds. 2. Make sure the connection of USB connector.
4422	Cannot clear the memory.	If an error occurs while communicating with the integrated unit or ABS (memory clear).	1. Perform the following steps. 1) The ignition key is OFF for 3 seconds, then ignition key is ON for 3 seconds. 2) Memory clear by using SSM4. 3) The ignition key is OFF for 3 seconds. 2. Make sure the connection of USB connector.
4423	Cannot clear the memory.	If an error occurs while communicating with the integrated unit (Read DTC) or if the acquired DTC are more than one.	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4425	Cannot clear the memory.	If an error occurs while communicating with ABS (Start Diagnostic Session).	1. Re-try after the data link connector is reconnected. 2. Confirm the connection of the USB connection. 3. Re-try from the first step after the ignition OFF. 4. Make sure the harness of the vehicle.
4501	Reprogramming has failed. Click "YES" to reprogram again.	The error is detected on the check SUM.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Confirm if the PAK file is correct. 4. Re-try from the first step after ignition OFF.

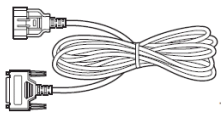
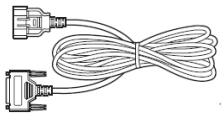
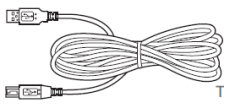
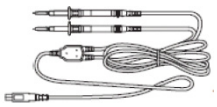
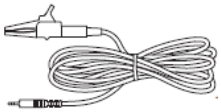
Error Code	Error Message	Cause	Corrective action
4517	Error in rewritten data verifying. Click "YES" to reprogram again.	The error is detected during the verification.	1. Re-try after the data link connector is reconnected. 2. Make sure the connection of the USB connection. 3. Confirm if the PAK file is correct. 4. Re-try from the first step after ignition OFF.

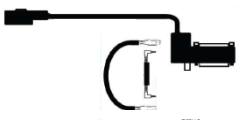
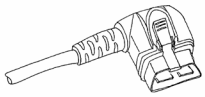
List of Part Numbers

DST-i Sets

Item		Part #	Remarks
DST-i with LCD set	DST-i (w/ LCD, w/o Bluetooth) set	95171-0111*	Bluetooth model is available only in the countries where DENSO acquires the radio wave certification. For the availability of the Bluetooth model, please ask DENSO sales company.
	DST-i (w/ LCD, w/ Bluetooth) set	95171-0112*	
DST-i without LCD set	DST-i (w/o LCD, w/o Bluetooth) set	95171-0106*	
	DST-i (w/o LCD, w/ Bluetooth) set	95171-0107*	

Optional Parts

Item	Part #	Remarks
Datalink Cable (1.5m) 	95171-12831	Contained in the DST-i w/o LCD set
Datalink Cable (3.0m) 	95171-12840	Contained in the DST-i w/ LCD set
USB Cable 	95171-10110	Contained in the DST-i set (w/o LCD, w/ LCD) 3.0m
Oscilloscope probe (for 1 channel) 	95171-12640	Contained in the DST-i w/ LCD set
Ground Cable 	95171-12710	Contained in the DST-i w/ LCD set
Storage bag	95171-31040	Refer to the marginal annotation *2 below for opened bag images.
DC Power Cable for Cigarette Lighter Socket	95171-11251	Optional parts for the Driving Recorder. Refer to SCI16-027
Oscilloscope probe head (Alligator clip type)	95502-10700	A pair of black and red heads
Oscilloscope probe head (IC clip type)	95502-10730	A pair of black and red heads

Item	Part #	Remarks
Oscilloscope probe head (Needle type)	95171-12880	A pair of black and red heads Dia. of the tip:0.5mm
Switch Box Cable set*1 	95171-01190	A Switch box cable, a trigger cable and an analog cable are contained. Refer to SCI16-027
Adaptor Assy, D-sub Connector	95171-13170	For the DST-i's with the following serial #. 5D0***** / 5D1***** Refer to SCI14-094.
Datalink Cable (L-Shape, 3.0m) 	95171-11740	The image shows the plug part of the cable.
USB Cable Spacer*1	95171-13020	Contained in the DST-i set (w/o LCD, w/ LCD) Refer to SCI16-026.
4-channel adapter set	95171-12740	Two oscilloscope probes and a 4-channel adapter are contained.
4-channel adapter	95171-12650	The same adapter as in the 4-chanel adapter set. Oscilloscope probes are not included.

*1 The USB cable spacer has been contained in the DST-i sets produced after May 2014. (Serial #5D121792 or bigger) For details, please refer to SCI16-026.

*2 Storage bag（95171-31040）images

Opened bag

example of usage